

**SAME-SEX BEHAVIOR DISCLOSURE AND HIV PREVENTION  
AMONG AFRICAN AMERICAN MEN WHO HAVE SEX WITH MEN**

by  
Christina J. Sun, MS

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## **ABSTRACT**

Disclosure of same-sex behaviors to health care providers and female sex partners has the potential of being an important aspect of HIV prevention among men who have sex with men (MSM). Disclosure to health care providers is associated with increased HIV testing; and to female sex partners, condom use. However, very little is known about disclosure and the factors that encourage or suppress disclosure. Therefore, the purpose of this dissertation was to build on the current understanding of individual-level factors associated with disclosure and to explore the influence of the social environment on disclosure.

A systematic literature review indicates that most of the research has been focused on quantifying disclosure rates. Some focus has been placed to identify individual-level correlates and there is a limited understanding of how relationship and disclosee characteristics are associated with disclosure.

A quantitative analysis was conducted on data from 226 African American MSM in Baltimore, MD, individual-level and social network characteristics differentiate men who disclosed to health care providers from men who did not disclose. Men who did not disclose were more likely to identify as bisexual and engage in risky drinking. Positive serostatus, socialization with social network members, and having a social network where all members knew the participant was a man who had sex with men are positively associated with disclosure to health care providers.

Two separate quantitative analyses were conducted using data from 108 dyads, reported by 62 African American men who have sex with men and women. Factors associated with disclosure are the age difference between the man and his female partners, level of trust between partners, and the male partner's HIV status. After

controlling for factors associated with disclosure, disclosure of same-sex behavior was significantly and positively associated with consistent condom use with female sex partners.

Findings from this research indicate that social environmental factors, in addition to MSM factors, are associated with disclosure to health care providers and female sex partners. Interventions that promote disclosure, when appropriate, should consider targeting the social network, disclosee, and relationship.

**Advisor:** Carl Latkin, PhD

**Readers:** Roger D. Peng, PhD, MS  
Elizabeth A. Stuart, PhD  
Karin E. Tobin, PhD, MHA

**Alternates:** Chris Beyrer, MD, MPH  
Danielle German, PhD, MPH

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## **CHAPTER ONE: INTRODUCTION**

## BACKGROUND

### *Epidemiology of HIV*

Despite over three decades of effort to prevent and treat HIV, HIV rates remain high in the United States. In 2011, an estimated 49,273 people in the US were newly diagnosed with HIV (1). The most common mode of transmission was attributed to male-to-male sexual contact, accounting for 65% of diagnosed HIV infections in 2011, which represents an increase from 2008 (1).

For men, male-to-male sexual contact as a route of transmission was attributed to 79% of infections (1). Male-to-male sexual contact represents the most common transmission category, dwarfing the second most common transmission category, heterosexual contact, by over 6 times (1).

In addition to high and increasing rates of new infections due to male-to-male sexual contact, Blacks/African Americans remain disproportionately affected by HIV. HIV incidence rate is highest for this racial group compared to all other racial groups (2). Overall, Blacks/African Americans represent 13% of the United States population (3), but make up slightly less than one-half (47%) of all new infections (1). Among men, 42% of HIV infections in 2011 were among Black/African American men (4). Among the highest transmission category, male-to-male sexual contact, 36% of HIV diagnoses in 2010 were among Black/African American men (2).

Racial disparities are seen in many other HIV-related illnesses. Blacks are less likely to be on antiretroviral therapy and be virally suppressed (5). The rate of AIDS is 8.5 times higher for Black men compared to White men (6). Black men are also 7 times more likely to die from HIV/AIDS as White men (6).

Similar trends are seen among Black/African American MSM (BAAMSM). The progression to AIDS is more likely among BAAMSM compared to White MSM (7). Furthermore, the three-year survival after AIDS diagnosis was lower for Black MSM than White or Hispanic MSM (7).

Things are not better at the Maryland state or Baltimore city level. Among the United States and 6 dependent areas, Maryland was among the top ten highest states or territories to be effected by HIV. For new HIV diagnoses, it had the seventh highest number of cases and the third highest rate (1). Similarly, among adults living with HIV, Maryland ranked ninth highest in number and fourth highest in rate of adults living with HIV (1).

In Baltimore city, Black/African American MSM account for 44.7% of the HIV prevalence (8). According to the Baltimore City HIV/AIDS Epidemiological Profile, in Baltimore city, Blacks/African Americans make up 61% of the population, yet account for 86% of HIV diagnoses in 2010 (9). In 2008, BAAMSM were 2.5 times more likely to be HIV-positive than compared to White MSM (8). However, BAAMSM were less likely to be aware of their HIV infection. The prevalence of unrecognized HIV infection was 76% among BAAMSM, significantly higher than White MSM (47%) (8).

#### *The role of disclosure*

Given the high rates of HIV and disparities, several researchers have conducted meta-analyses or reviews to try to explain the disparities (10-12). Postulations include differences in high-risk sexual behavior, disclosure, contraction of sexually transmitted diseases, genetic susceptibility, and incarceration experiences. Few studies have explored

the potential of disclosure to health care providers (HCPs) and sexual partners as part of HIV prevention strategies.

By disclosing same-sex sex behaviors to HCPs, these professionals can offer comprehensive evaluations and recommend appropriate disease screenings to improve health (13). Disclosure has been found to be positively associated with MSM testing for HIV, receiving recommendations for sexually transmitted infection (STI) testing, and being offered the Hepatitis A or Hepatitis B vaccine (13, 14).

Other researchers have also explored disclosure to sexual partners and the relationship between disclosure and sexual risk. Nondisclosure to female sex partners was negatively associated with condom use; nondisclosure was associated with less condom use with female partners and more unprotected vaginal intercourse (15-17). However, others have found no association with disclosure and condom use (18).

#### RATIONALE FOR RESEARCH

Despite these positive outcomes associated with disclosure, few studies have identified factors outside the individual that are linked to disclosure. It is for this reason that the present research looks at how the social environment may influence disclosure of same-sex behavior by men who have sex with men.

#### THEORETICAL PERSPECTIVE

Social Cognitive Theory (19), Ecological Model (20), and the Dyadic Framework for HIV-Prevention (21) serve as a guide to more thoroughly examine and analyze same-sex behavior disclosure.

##### *Social Cognitive Theory*

Social Cognitive Theory (SCT) builds on Bandura's previous Social Learning Theory with the addition of concepts from cognitive psychology. SCT stresses the



importance of reciprocal determinism, the interaction between personal factors, behavior, and the environment. Therefore, in order to understand whether a man discloses his same-sex behavior (behavior), one needs to consider the influence of his personal factors (such as expectations and attitudes) and the environment (including his social network and relationship with the target of the disclosure (e.g., female sex partner or health care provider)).

### *Ecological Model*

The Ecological Model proposed by McLeroy and colleagues (1988) describes five different levels that influence behavior: intrapersonal factors, interpersonal processes and primary groups, institutional factors, community factors, and public policy. By analyzing how behavior is affected by and affects each of these levels, one can focus on both individual and environmental determinants of a behavior. This analysis allows researchers to understand multiple and interacting determinants of behavior and create interventions that consider the multiple levels of influence that need to be addressed to create supportive environments.

Additionally using the Ecological Model tends to minimize victim blaming or the assumption that behavior is purely an individual choice. This perspective is particularly important when studying a stigmatized health outcome (HIV) in a stigmatized population (men who have sex with men).

### *Dyadic Framework for HIV-Prevention*

Finally, the Dyadic Framework for HIV-Prevention combines previous theoretical underpinnings to provide direction to analyze the different levels that influence a dyadic interaction to coordinate safer sex behaviors, such as using a condom, having discussions

about sexual history and practices, and getting tested for HIV and sharing the results.

This framework stresses the importance of the dyad, because sexual transmission of HIV is social in nature and requires two people (i.e., one person to transmit and one person to receive). Drawing from the Theory of Interdependence (22, 23), each person in a dyad has influence on the other person, relationship, behavior, and interaction. Safer sex behaviors are interdependent, because each member of the dyad must participate.

The Dyadic Framework for HIV-Prevention considers the sources of influence from the most proximal to the dyad to the most distal: proximal context, individual-level variables, and structural-level variables. Within the proximal context, each individual's beliefs and motivations, the relationship context (including commitment, trust, satisfaction, power, communication, and intimacy), and the immediate physical environment are considered. Individual-level variables include education, gender, substance use, and personality. The structural-level variables are focused on the cultural and historical context, including social networks, gender equality, and economics. These listed variables are examples of each type of variable and are not meant to be an exhaustive list.

While this Framework is focused on the outcome of safer sex behaviors, broadly defined, the application of the dyadic perspective can also be useful in understanding the relationship between patient (in this study, the MSM) and health care provider. Using a dyadic perspective, allows for a continuum of involvement and influence between the two members of the dyad, ranging from superficial, one-time encounters, to long-term relationships.

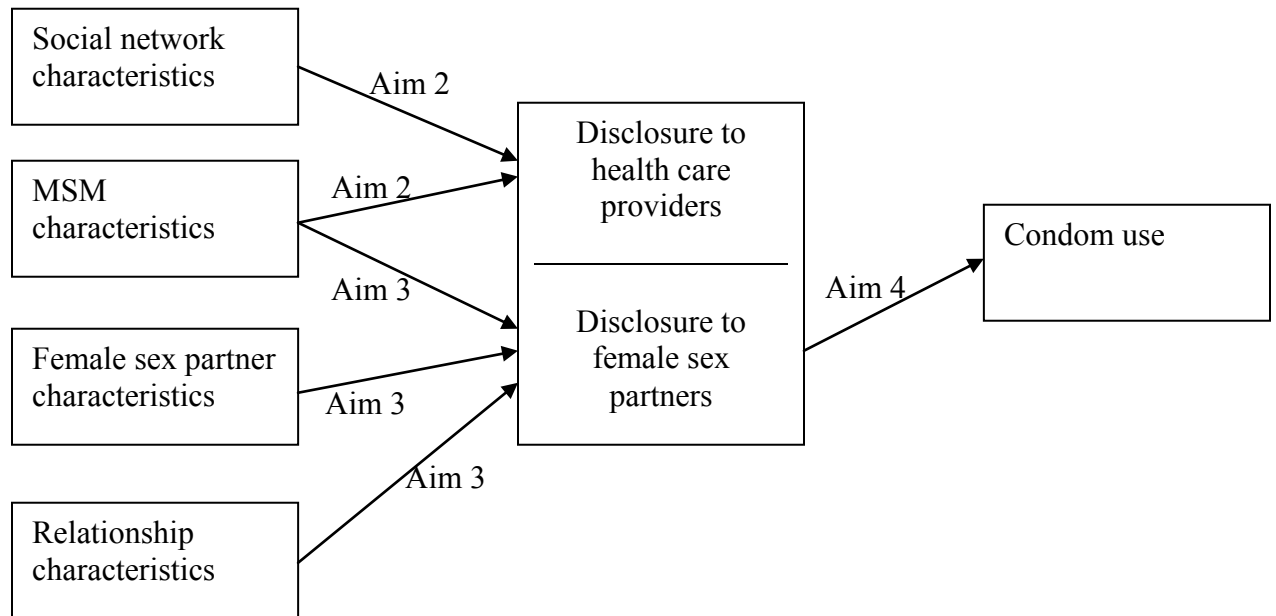
## STUDY AIMS

The overall goal of this dissertation research is to examine how the social environment influences the disclosure of same-sex behavior by Black/African American men who have sex with men. The specific aims are:

1. To describe the scientific evidence for disclosure of same-sex behavior to promote HIV prevention, including factors associated with disclosure of same-sex behavior
2. To identify the factors associated with disclosure of same-sex behavior to health care providers
3. To identify women to whom have been disclosed and factors associated with disclosure of same-sex behavior to female sex partners
4. To examine the association between disclosure and condom use with female sex partners

## CONCEPTUAL MODEL FOR ANALYTICAL AIMS 2, 3 AND 4

Figure 1.1 Conceptual Model



## DISSERTATION ORGANIZATION

This dissertation is organized into six chapters and includes three manuscripts.

### *Chapter 1: Introduction*

The first chapter provides an introduction to HIV rates and racial disparities in the United States, Maryland, and Baltimore, MD. It also outlines the aims, rationale, and theoretical perspectives for this research.

### *Chapter 2: Manuscript 1*

The first manuscript is a review of the empirical literature focused on disclosure of same-sex behaviors, including the rates and factors and outcomes associated with disclosure. In addition to the summary, a critique of the literature is conducted in order to identify gaps and make recommendations for future research.

### *Chapter 3: Methods*

This chapter describes the methodology used for the two quantitative studies in the dissertation. Included are detailed descriptions of the source of the study data, data quality, and analytical method.

#### *Chapter 4: Manuscript 2*

The second manuscript is a quantitative analysis of existing data collected from Black/African American men who have sex with men as part of an HIV-prevention intervention in Baltimore, Maryland. The aims of this analysis were to identify the characteristics of social networks and men who have sex with men that are associated with disclosure to health care providers. Bivariate and multivariate logistic regression models using with generalized estimating equations are presented to address these aims.

#### *Chapter 5: Manuscript 3*

The third manuscript is also a quantitative analysis of existing data collected from Black/African American men who have sex with men as part of an HIV-prevention intervention in Baltimore, Maryland. The aims of this analysis were to identify female partners who were disclosed to, identify factors associated with disclosure, and examine whether disclosure was associated with condom use. Bivariate and multivariate logistic regression models using with generalized estimating equations are presented to address these aims.

#### *Chapter 6: Discussion*

In this chapter a summary of the findings, limitations, and implications are discussed.

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## **CHAPTER TWO: MANUSCRIPT 1**

Disclosure of same-sex behavior and HIV  
Prevention: A review of the literature

## ABSTRACT

The purpose of this literature review is to examine the current knowledge of disclosure of same-sex behavior by Black men who have sex with men. One hundred twenty-three unique articles from three databases were reviewed. A summary and critique is presented to cover the measurement and rates of disclosure, factors associated with disclosure, association between disclosure and HIV risk, and theoretical perspectives are presented. Research gaps are presented and research questions are suggested to improve the understanding of this topic.

## INTRODUCTION

### *Epidemiology of HIV among Black/African American men who have sex with men*

Despite three decades of effort to address HIV, there remain large racial disparities. In the United States, Black/African American men who have sex with men (BAAMSM) are disproportionately affected by HIV. Although African Americans represent 13% of the United States population (1), in 2011, 46% of HIV diagnoses were among Blacks/African Americans (2). The diagnoses rate for Blacks/African Americans was the highest among all ethnic/racial groups in 2011 (2). At a rate of 60.4 cases per 100,000 people, this rate is 8.6 times that of Whites (2).

Overall, the highest HIV diagnosis rate is among Black/African American men (112.8 per 100,000) and the third highest diagnoses rate is among Black/African American women (40.0 per 100,000) (2). Blacks/African Americans also represent the largest percentage of people living with HIV and AIDS (44% and 43% respectively for men and women) (2).

Among all HIV diagnoses in 2011, 62% of them were reported to be due to male-to-male sexual contact (2). Of HIV infections attributed to male-to-male sexual contact,

38% of them were among Blacks/African Americans, representing the highest burden among all ethnic/racial groups (2). BMSM had the second highest number of new infections in (10,600), following closely behind white MSM (11,200) (3).

HIV also has a large impact on Baltimore city. HIV is the fourth cause of death in Baltimore city with a rate of 3.9 per 10,000 and accounting for 3.5% of all deaths (4). In addition to these high numbers and rates of HIV locally, the trend of racial disparities is also seen at this local level. Broadly, comparing Blacks to Whites and Black men to White men, the rate for HIV mortality in 2008 was 7.6 times and 7.7 times higher, respectively, for Blacks (5). This represents a disparity greater than 50%. In Baltimore city, HIV prevalence in 2008 was 45% among BMSM (6). BMSM were 2.5 times more likely to be HIV positive compared to white MSM (6).

In addition to the racial disparities in the rates of HIV, there are significant disparities in HIV health care and outcomes by race. Based on a national sample of HIV-infected Black and White MSM, Blacks are less likely to be on antiretroviral therapy and be virally suppressed (7). The progression to AIDS is also more likely among Black MSM compared to White MSM (based on 2001-2004 National HIV/AIDS Surveillance System data) (8). Furthermore, the three-year survival after AIDS diagnosis was lower for Black MSM than White or Hispanic MSM (8).

#### *Addressing disparities in HIV among BMSM*

To understand these disparities in HIV infection among Black and White MSM several researchers have conducted reviews or meta-analyses to explain the disparities (9-11). They conclude that BMSM are less likely to disclose compared to other MSM. They

also conclude that individual behavioral risk do not explain the racial disparities and call for a focus on other factors, including structural and social environments.

One of the review articles sought to examine the scientific literature to determine which hypotheses might explain the disparity in HIV rates between BMSM and other MSM (10). Of the 12 hypotheses examined, the authors concluded that the hypothesis “BMSM are less likely than other MSM to identify as gay or to disclose their sexual identity, which may lead to increased HIV risk behavior” is not supported by the scientific evidence. In order to evaluate this hypothesis the authors reviewed four bodies of work that compared BMSM to other MSM in terms of sexual identity, disclosure of sexual identity or homosexual behavior, association between sexual identity and HIV risk behavior, and associations between sexuality disclosure and HIV risk behavior. Given the scope of this review, particular focus was placed on reviewing the studies the authors found that measured the association between disclosure and HIV risk behavior. Two of the three studies were nonsupportive of the claim “nondisclosure of sexuality among Black MSM is associated with high-risk sex.” However, this conclusion should be regarded with caution as two of the studies did not actually measure the behavior of disclosure.

Instead of measuring disclosure, these studies measured the men’s comfort in disclosing (see (12, 13)). While comfort in disclosing may be an antecedent to actual disclosure, this study measured an attitude instead of a behavior; therefore, it is not possible to use these studies to draw conclusions between the association between disclosure and HIV-related behaviors. Furthermore, for the study by Crawford and colleagues (2002), disclosure was measured as part of a scale about three facets of sexual

identity adjustment. The association between the entire scale and sexual risk-taking were looked at, making it difficult to understand the particular influence of disclosure of sexual orientation and HIV risk. The authors of the study also state “extensive psychometric validation of the measures developed specifically for this study (i.e., the GID [Gay Identity Scale] and SRS [Sexual Risk-Taking Scale]) was not undertaken; consequently, conclusions regarding sexual identity development and sexual risk-taking behavior should be drawn cautiously (p. 187).”

The third study reviewed to understand the disclosure-HIV risk association found that men who did not disclose had a lower HIV prevalence rate and were more likely to have more sexual risks with female partners, but less likely to have sexual risk behaviors with men compared to men who did disclose (14). Sexual risk behaviors with men included having five or more lifetime partners and unprotected anal intercourse. Therefore, in some respects non-disclosure is associated with high-risk sex, but the caveat of the gender of sex partners needs to be taken into account. One should also note that this study operationalized disclosure as “let others know that you are sexually attracted to me.”

In addition to the association between disclosure and HIV sexual risks, other researchers have identified other benefits of disclosure, including those related to mental health, physical health, and HIV testing. Therefore, given the concerns raised above and in order to systematically summarize the current knowledge of disclosure of same-sex behavior by Black men who have sex with men, and in particular how it relates to HIV risk, a literature review was conducted as a summary and critique.

## METHODS

To identify this body of literature, three electronic databases (Web of Science, Scopus, and PubMed) were searched to find published research studies about disclosure within the context of HIV prevention. The following terms were used: disclos\* AND (African American OR African-American or Black\*) AND (HIV OR HIV/AIDS OR AIDS) AND (Men who have sex with men OR MSM OR gay OR non-gay identified OR homosexual). Inclusion criteria for studies were the report was written in English, occurred in the United States of America, were about men who identified as African American or Black, and published through January 2013.

To separate the potentially relevant from the irrelevant studies, the reviewer engaged in a multi-phase process. First, the title of each article was read. If a classification could not be made based on the title, the abstract was read. If it was still unclear whether the article was potentially relevant, the article was electronically downloaded and the manuscript was electronically searched for the term “discl” (; if an electronic search was not an option, the article was read). If the article met the inclusion criteria, it was kept for more in-depth review.

The following paragraphs summarize the findings of this literature review. In particular, the following questions are answered: (1) How is disclosure measured and studied? , (2) What are the disclosure rates?, (3) What factors are associated with disclosure?, (4) What is the association between disclosure and HIV risk?, and (5) What theoretical perspectives have guided this research (see Table 2.1 for a summary of the articles and research questions answered)? At the end, recommendations for future research to address gaps in the literature are made.

## RESULTS

### *Summary of articles identified*

In summary across the three database searches, 123 unique articles were identified. After removing 12 studies that occurred with non-American populations, 10 that were not about Black men who have sex with men, and 1 that was a reprinted study, an additional 18 studies were removed because they were not about disclosure. Of the disclosure studies, 37 were about HIV serostatus; 1, viral load; 1, clinical trial results; and 1, child sexual abuse. These were removed because they were not the focus of this review.

This resulted in a total of 42 articles for in-depth review. Of these 42 articles, 5 were review articles and 1 was a meta-analysis. Of these six articles, the original empirical studies used for the review or meta-analysis were retrieved and reviewed using the methods described above to determine the relevance. From the review and meta-analysis articles, 18 additional unique articles were identified and 10 underwent in-depth review (2 articles could not be obtained, one of which was a conference presentation and the other was an unpublished manuscript).

Of the remaining 40 studies that empirically measured the experience of BMSM disclosing aspects of their sexuality, most studies measured disclosure of same-sex behavior (n=18). The second most popular topic was the disclosure of sexual orientation (n=10). A few measured disclosure of same-sex behavior or attraction to men simultaneously (n=4). The remaining studies measured comfort in disclosing (n=4), or disclosure of sexuality (n=2), sexual identity (n=1), or attraction to men (n=1).

Studies about comfort in disclosing were eliminated because they did not actually measure whether disclosure had occurred. Additionally, studies about disclosure of sexual orientation, sexual identity, or attraction were excluded. Disclosing sexual orientation, sometimes referred to as “coming out,” involves an individual identifying with a sexual minority identity and then disclosing it to others. This process is not the same as disclosing same-sex behavior. While disclosure of sexual orientation may allow disclosees to infer that the discloser is engaging in same-sex behaviors, sexual orientation also encompasses other facets, including attraction and desire. Furthermore, African American MSM are less likely to identify as gay or bisexual so the reliance on sexual orientation disclosure may result in missing a significant proportion of MSM and misidentification of men who are at risk for HIV and STIs. Finally a sexual identity itself does not put someone at risk for HIV and in order to address HIV risk the focus should be on the engagement of same-sex behavior. Similarly, attraction to men is not a risk factor and these studies were removed. In total 34 articles are summarized and discussed in the following sections (see Table 2.1).

Participants in all but 3 studies included Black/African American MSM (in these 3 studies, the participants were women). Men who identified as Black/African American consisted of 5.9% to 100% of the study samples, with slightly over one-third (34.9%) of studies employing samples of all Black/African American men. When possible, results for Black participants only were reported below.

#### *Question 1: Measurement of disclosure*

Measuring rates of disclosure was the most studied aspect, conducted by 22 of the studies. There was quite a bit of variability across the studies when measuring to whom



disclosure occurred (i.e., disclosee). Some researchers measured disclosure to specific targets, while others asked about disclosure in general. Those who focused on specific disclosees used one of two different methods. Researchers either provided a list of specific social roles to whom disclosure may have occurred or asked men to identify important others and then describe their disclosure to this set of self-identified individuals.

The vast majority of studies measured disclosure in a dichotomous fashion (disclosure either happened or it did not happen). However, some researchers took a more nuanced approach by asking participants to rank their level of disclosure. For example (see (15)), participants could note whether they had discussed their homosexual behavior with the target, whether they suspected the target knew, or whether the target had no knowledge of their behavior.

In addition to measuring disclosure by asking the men to self-report their behavior, researchers could measure the experiences of female partners of MSMW to see whether they are aware of their male partners' same-sex behaviors. While most of the research about disclosure has occurred by surveying the men, two published studies identified in this review have surveyed women. In one study of 3,139 women, fewer Black women reported having a bisexual partner compared to White women (6% and 14%, respectively), although the proportion of Black MSM who reported having sex with a woman was higher than White MSM (34% and 13%, respectively) (16). The authors used these findings to suggest that female partners of Black MSM may not know their bisexual activity (16). However, the opposite was found in another national-level study;

the rate of HIV infection due to sex with a bisexual man was five times higher among Black women than among White women. (17).

### *Question 2: Targets and rates of Disclosure*

The most commonly measured target was family (n=9), followed by friends (n=8), health care provider (n=7), and female sex partner (n=7). The following paragraphs describe the rates of disclosure to specific targets: family, friends, health care providers (HCPs), and church members.

#### Family

In most studies, disclosure to family members was measured broadly, in other words, participants were asked whether their family members collectively knew about their same-sex behaviors. Some studies did ask about whether disclosure had occurred to a specific family member, such as mother, father, brother, etc., but when reporting the findings, most collapsed across family role and did not present results for each type of family member.

The rates of disclosure to family members ranged from 15% to 85%. The study which reported the highest disclosure rate was among a sample made up entirely Black MSM (18). Similarly, other researchers report that in a study of 496 young MSM (24% of the sample was Black and results not stratified by race), that only 15% of participants reported none of their family members knew their sexuality (19). Rates were lower for an older ( $\geq 50$  years) sample of Black and Latino MSM, 53% had disclosed to no or less than half of family members (89% of the sample was Black; results not stratified by race) (20).

One study investigated racial differences in disclosing to family members. Black men were less likely to disclose to their family compared to White men, 46% and 62%,

respectively (21). There was an interaction between race and education. As education increased, the percentage of Black men who disclosed decreased; while for White men, there was a tendency in disclosure to increase as education increased.

### Friends

In the study of friends, some researchers asked about disclosure to friends generally, while others differentiated by friends' sexual identity (i.e., non-gay identified or gay friends). For rates reported for African Americans only, there were large discrepancies in disclosure to non-gay identified friends; in one study, the rate was 35% (21) while another estimated it to be 86% (18).

In mixed race samples that did not provide information for Black men specifically, there was also large variance. In one study of older Black and Latino men, 37% reported they were out to none or less than half of the friends (20). While among a sample of young MSM (24% of whom were Black), 91% reported that their best friends and 71% of other friends knew about their sexual identity, attractions, or behavior (19).

Consistently across all friendship types, White MSM were more likely to disclose to friends (18, 21). This included disclosure to gay friends (81% compared to 95% for White participants) (21).

### Health care provider

Health care provider was another frequently asked about target. There was also quite a range of disclosure from about one-third who had disclosed (21, 22) to slightly less than three-quarters (18, 23). Across all studies that compared racial differences, White MSM disclosed to health care providers more frequently than Black MSM (18, 21, 22).

### Female sex partners

The disclosure rate to female sex partners appears to be bimodal, with either about 20% (24, 25) or 70% (see (26, 27)) of the participants disclosing. The variation could be due to several study design factors: operationalization of FSPs and the sample. In some studies, the person of interest was the most recent female sex partner (e.g., (26)), while other studies asked about all female partners over a certain period of time (e.g., (25)), or differentiated between steady and non-steady partners (e.g., (25)). Additionally some studies were focused on men in a specific geographic region (e.g., Chicago, New York City) while others recruited men across the nation. Furthermore, of the four studies presented, one sampled men in the mid 1990s while the other three were more recent (data collection occurring in 2009).

### Church members

Disclosure to members of their church had only been studied in one study. In this study, 12% of Black men had disclosed, compared to 32% of White men (21).

### Ethnic differences in disclosure rates

Overall, BMSM disclosed less frequently than White MSM to specific disclosees (18, 21, 22, 25, 26) and when disclosure was measured generally (15, 28). Additionally, BMSM had disclosed least frequently to members of the religious community. Reasons for disclosure and nondisclosure and a discussion about the context of same-sex behavior disclosure in the African American community are discussed in more detail below.

### *Question 3: Factors associated with disclosure*

### Context of same-sex behaviors in Black/African American communities

Most of the studies identified for this literature review do not actually empirically measure the social context that African American MSM live in, but instead discuss it broadly in their respective literature review as a way to set up the premise to study disclosure. Authors have discussed the homophobia and stigma in the Black community as a barrier to disclose (e.g., (15, 19, 21, 24-26, 29-31)). Conservative religious views and the strong position of the church as an institution seem to promote the condemnation of same-sex behavior (e.g., (21, 32, 33)). Additionally others have discussed the role of hypermasculinity and masculine gender norms play in the acceptance of male-male sexual behavior and the prescription of certain sexual behaviors that are “appropriate” (e.g., (21, 32, 34-36)). Additionally, one must consider the role of race and racism and how that relates to experiences of BMSM generally and in particular with disclosure. Compounded by racism, BMSM face marginalization and must address discrimination and hostility from their membership in a minority ethnic group, creating unique social context for disclosure (e.g., (21, 37)).

Of the studies that did study the social context, it was found that African Americans perceived their social networks and community as less accepting of homosexuality compared to White participants (25). Furthermore, for men who perceived that their network members or friends were accepting of homosexual behavior, they were more likely to disclose (25).

Relatedly, individuals may internalize the stigma towards homosexuality. If BMSM report their social networks and communities as less accepting they may also have higher levels of internalized homonegativity and this could explain the lower rates of disclosure. Empirical studies seem to support this claim. Black MSM reported higher

self-homophobia compared to White MSM and men who reported less internalized homophobia were more likely to have disclosed same-sex behavior (28). In an ethnically diverse study of both sexual minority men and women, disclosure was negatively associated with internalized homophobia and perceived heterosexist stigma (38).

Given this context, there are many reasons MSM would be hesitant to disclose their same sex behavior or sexuality. Primarily men perceive stigma towards their same sex behaviors. In qualitative studies, participants discussed the potential negative consequences of disclosure, including fears that they would lose their relationship with family members or female sex partners, status in the community, or jobs, or experience physical violence (24, 39). Additionally, they were concerned that they would hurt their female sex partners' feelings or be rejected by their partner (24, 40). Some men perceived that women thought male bisexuality was "bothersome" and that disclosure could result in serious physical, emotional, and social consequences (40).

Within the context of seeking health services, men identified several reasons for not disclosing, including fear of inadvertent disclosure, a desire for privacy, and not feeling comfortable discussing same-sex behaviors with their HCP (41, 42). There were also some provider- and situational-specific reasons for not disclosing, including having a health care provider who does not ask about same-sex behaviors or the health services being sought having nothing to do with sexual health (41). Additionally, some men described previous counseling experiences where their counselors showed personal biases against and negative judgments about their sexuality (32).

However, despite these significant consequences, men identified reasons for disclosure, which include a desire to be accepted as their true self, to be honest, to have

an honest relationship with female partners, and for health care reasons (24, 39).

Therefore, men have engaged in various levels of disclosure. Some choose to fully disclose, while other consciously omit information, such as disclosing just past same-sex behaviors and not current behaviors with men (24, 39).

#### Differences between disclosers and non-disclosers

In addition to describing and quantifying the frequency and rate of disclosure, researchers have also been interested in the differences between those who disclose same-sex behavior and those who do not disclose. Most of the attention has been on identifying individual-level factors that differential disclosers from non-disclosers. Some effort has also been paid to looking at disclosee and relationship characteristics that support or hinder disclosure. In the following paragraphs, first, characteristics of the disclosee and its directional association to disclosure are described. Relationship characteristics are then described, followed by a summary of discloser factors. These factors are depicted in the following figure (see Figure 2.1).

#### ***Disclosee characteristics***

The least attention has been dedicated to studying and identifying disclosee characteristics. In general, if a MSM perceived a disclosee had stigma against homosexuality, disclosure was less likely to occur (39). Disclosure was more likely to occur if the network member was HIV positive and was not a female sex partner (29). MSMW reported being more comfortable disclosing to a male or female partner if s/he identified as bisexual (24, 40).

#### ***Discloser-disclosee relationship characteristics***

Similarly little attention has been given to the relationship characteristics associated with disclosure. Among social network members, disclosure was more likely when a social network member provided emotional support and socialized with them (29).

Most of the work has looked at the relationship between female sex partners and MSMW. Three studies found a positive association between disclosure and intimacy with partners; disclosure was more likely when men were in a longer lasting and more serious relationship or committed relationship (24, 39, 40). However, in one study of mixed race MSMW, there was no association between disclosure and having a steady FSP (i.e., wife, partner) (25). Additionally, men who had discussed their HIV status with their female sex partners were more likely to disclose (26).

### ***Discloser characteristics***

Compared to men who identify as bisexual, men who identified as heterosexual were less likely to disclose while men who identified as homosexual were more likely to disclose (26). As African American men are less likely to identify as gay or homosexual, this may be part of the reason racial differences in disclosure are seen. Similarly, in a qualitative study, the men who identified as bisexual more often engaged in disclosure to female partners (24).

Age of the men was also another factor that was often significantly associated with disclosure. Younger men were more likely to disclose to steady female sex partners (25) and their social network (29).



There was a positive association between annual income and disclosure to health care providers, after controlling for race. Compared to men whose income was less than \$10,000 per year, those with higher income were more likely to disclose (22).

In studies about disclosure to one's social network, two studies had contrary results about the relationship between education and disclosure. One study found that higher education (at least college, associates or technical degree) was positively associated with disclosure to one's social network (29), while another found that as education increased, the percent of men who disclosed to family members, straight and gay friends, coworkers, health care providers, and church members decreased (21). These differences could be due to the sample; the study by Latkin and colleagues recruited BMSM while Kenamer and colleagues limited their analysis to men who self-identified as gay or bisexual.

In addition to these factors, studies have also looked at the association between gender role conflict, substance use, and birth location. Men who reported higher gender role conflict compared to men with lower gender role conflict (34) were less likely to disclose. Recent use of club drugs (i.e., drugs that are commonly used at clubs, raves, or dance parties, including cocaine, methamphetamine, ecstasy, GHB, and ketamine) (19) and having been born in the United States (22) were positively associated with disclosure.

#### *Question 4: Association between disclosure & HIV risk*

A multitude of HIV risk behaviors have been evaluated. For MSM who also have sex with women, unprotected vaginal or anal intercourse (UVAI) was negatively associated with disclosure. In other words, men were less likely to disclose if they had UVAI (27) and more non-disclosers had UVAI compared to disclosers (14).

Additionally, others have found that non-disclosers used condoms less consistently with female sex partners (51% of the sample was Black) (25). However, no association has been found between condom use at last vaginal sex and disclosure among a sample that was 13% Black (26).

In general, the number of female sexual partners was negatively associated with disclosure. Non-disclosers had more female sex partners in the past 6 months (25), reported having one or more female partners in the past 6 months (14), and reported having 3 or more lifetime female partners (14). Men were less likely to disclose if they reported having any female partners in the past 12 months (22).

For HIV-risk with male partners, the outcomes have been number of partners, unprotected anal intercourse, and condom use. Contradictory findings were found across studies. In terms of number of male partners, in one study, no difference in the number of male partners in the past 6 months was found between disclosers and non-disclosers (25); however, in another, men who have 5 or more partners in their lifetime or a male partner as a main partner were less likely to disclose (14). With regard to UAI, studies either report men who engaged in unprotected anal intercourse with men were more likely to disclose (43, 44) or no association between unprotected anal intercourse (either receptive or insertive) and disclosure (45). Additionally, in a mixed-race study, there was no association between disclosure and condom use with male sex partners or any instance of unsafe sex (25).

Disclosure to health care providers was positively associated with men having ever been tested for HIV (22), tested for HIV within the past year (23), and having had 3

or more HIV tests (14). Furthermore, syphilis and gonorrhea testing in the past 12 months was positively associated with disclosure of male-male sex to a health care provider (46).

The association between HIV serostatus awareness and disclosure is not clear. When considering awareness of HIV positive serostatus, one study found that men who were unaware of their HIV positive serostatus were more likely to disclose (47). However, in another study, men who reported not being aware of their HIV status compared to men who reported being HIV negative were less likely to disclose (26). HIV positive men were more likely to disclose (48).

#### *Question 5: Theoretical perspectives*

In the study of disclosure of same-sex behavior, few theoretical perspectives have been utilized to provide a framework for researchers to organize the associations found. Most studies do not explicitly state their theoretical perspective and appear to be atheoretical. All studies describing disclosure of same-sex behavior to health care providers have not stated a theoretical perspective.

Among the few studies that have used theory or theoretical constructs to guide their research, in one study about women's perspectives about African American "down low" men, the Black sexual politics perspective was used to understand "the complexities of interpersonal sexual health communication between African American men and women" (p. 888) (32). Briefly, Black sexual politics is an application of critical social theory and consists of "a set of ideas and social practices shaped by gender, race, and sexuality that frame Black men and women's treatment of one another, as well as how African Americans are perceived and treated by others" (p. 7) (49).

Another study used the sexual scripts theory to look at reasons for disclosing or concealing same-sex behaviors from female sex partners (see (24)). Sexual scripts theory was first presented in a landmark book in the sociology of sexuality (50) that argued that the study of sexuality should be analyzed within the social and symbolic and not just limited to the biological.

Finally, in one study that sought to differentiate the behaviors between BMSM and BMSMW, social constructionist theory and the biopsychosocial framework served as the theoretical frameworks (see (45)). Social constructionism emphasizes the examination of the cultural, historical, political, and economic conditions, which shape reality, for a deeper understanding of the topic of study (51). The biopsychosocial model suggests that health is understood by understanding the combination of biological, psychological, and social factors (52).

Outside of sociological theories, the other study sought to understand the costs and benefits of disclosure and used the decision balance construct from the Transtheoretical Model (39), an individual-level theory. Decisional balance was originally adapted from a model on decision making posited by Janis and Mann (1977). When first presented, there were eight main categories of costs and benefits (four gains and four losses): utilitarian gains and losses for self and others and approval or disapproval for self and from others (53). However, in most studies a two-factor structure (pros and cons) has been found to be stable and is used instead of the eight categories (54).

Two studies seem to support the utility of the decisional balance theoretical construct for understand approaches to disclosure of same sex behavior. In one

qualitative study involving interviewing 38 Black MSMW, Malebranche and colleagues (2010) found that “disclosing same-sex or bisexual behavior entailed weighing the relative pros and cons, considering the gains and costs to self and others, and considering the approval or disapproval from others that may result from disclosure” (p. 162, (39)).

Another study about factors that influence a group of 18-30 year old BMSMW in New York City to disclose or not disclose their bisexuality to their female partners seems to also support the two-factor structure. While the authors did not explicitly discuss the use of decisional balance to guide their understanding, in summarizing the experiences of disclosure of their participants, the researchers concluded “our participants organized disclosure around the costs and benefits that disclosure would have for them and, to a lesser extent, their sexual partners” ((p. 693, (40))).

## DISCUSSION

This literature review answered five different questions about measurement, rates, associated factors, outcomes, and theoretical perspectives used to study disclosure.

Across the studies, the measurement of disclosure was not consistent. Disclosure rates were the most reported aspects and there is quite a range of rates for various disclosure targets. In comparing differences between disclosers and non-disclosers, individual-level discloser characteristics are the most studied, but the association between these factors and disclosure has not always been consistent across studies. Many of the findings have also not been replicated. A multitude of HIV risk outcomes have been looked at, both with male partners and female partners. Less research has been conducted on HIV risk with male partners than female partners. There is not a clear consensus of the association between disclosure and HIV risk with female partners across studies. Among the few

articles with a stated theoretical perspective, these tend to draw from sociology or psychology theories.

### *Recommendations*

Given the summary above, the following recommendations are made for future research. These recommendations cover conceptual and study design aspects.

#### Increase attention to conceptualization

Very few of the articles included in this literature review provided or referred to a specific conceptualization of disclosure or a theoretical framework in which to guide the inquiry. This limits the conceptual work done to further understand the phenomenon and its impact on HIV risk, an important issue to address for population health.

Additionally, several studies focused on the experiences of non-disclosing MSMW. There needs to be additional research and discussion of whether concealment is merely the opposite of disclosure or a different construct that involves different processes and mechanisms.

Another area of concern is the conflation of sexuality and same-sex behavior disclosure. During the search procedure, articles about the disclosure of sexual orientation, sexuality, and sexual identity were all identified. While there may be overlap between these terms, researchers should be specific and explain their rationale for measuring one or the other. Because not all MSM identify as gay or bisexual, self-reported sexual identities are not enough to assess HIV risk. Furthermore, self-identifying as gay or bisexual does not definitely put one at risk for HIV. Instead, the behaviors are necessary for such an assessment.

#### Study design

All the quantitative studies reviewed used a cross-sectional study design. This allows for an exploration of associations but does not allow researchers to establish a cause-effect relationship. Expanding research designs to include longitudinal study design would allow researchers to potentially establish causal relationships, provided there are no confounding issues.

Furthermore, mixed methods, the blending of quantitative and qualitative data, could be particularly useful. For example, as discussed in the qualitative research findings, there are negative consequences for men who disclose engaging in same-sex behavior; using longitudinal quantitative designs could build on these findings and researchers would be able to quantify the effects of disclosure on changes in social networks, social support, and physical and mental health.

#### Focus on other aspects related to disclosure

Most research has measured the occurrence of disclosure. Limited work has identified factors associated with it and most of these have been about the men and individual-level characteristics. Little is known regarding how the discloser may influence disclosure and if the process of disclosure is different to different targets. For example, disclosure to health care professionals may involve indicating the sex of sexual partners on an intake form or answering the question verbally as part of the HCPs' collecting medical history background, while disclosure to a family member may involve an in-depth, one-on-one conversation that covers other aspects, such as who else knows and when did this behavior begin.

Additionally, organizational factors were not studied in any of the studies. Disclosure to health care providers may be particularly influenced by organizational

factors. For example, is disclosure to HCPs more likely to occur if the inquiry about the sex of sexual partners becomes routine? This area of inquiry would also benefit from using other methodologies, such as observation and document review. Researchers could either observe the clinic staff and clinic features that enable disclosure or drawing from patient-provider communication work could listen to or observe the HCP-MSM interactions. Document review would also provide insights into the organizational policies in place.

#### Employ additional theoretical perspectives

Except for the studies described above, in general, there has been a lack of a theoretical discussion around disclosure of same-sex behavior. Despite disclosure being a social process and requiring at least two people, the one who discloses and the one who is disclosed to, individual-level theories dominated this area of research. Social Cognitive Theory (55), Ecological Model (56), and the Dyadic Framework for HIV-Prevention (57) are proposed to serve as a guide to more thoroughly examine and analyze same-sex behavior disclosure. These perspectives, in particular, will be able to aid in expanding our understanding of discloser and relationship characteristics that influence disclosure, an area that has not receive much attention.

While each of these theories and frameworks focus on different aspects, they would commonly guide the research by considering factors outside the individual that are influencing the behavior. This opens the scope of intervention development to the multiple and interacting levels of influence that need to be addressed.



## LIMITATIONS

There are several limitations to this literature review. It is possible that articles about disclosure of same-sex behavior were missed. By searching electronic databases, papers and reports that are not published in journals were not included. The publication bias towards positive results should also be acknowledged. Null research findings are rarely published and this may skew our understanding of the relationship between discloser, relationship, and discloser factors and disclosure or disclosure and HIV risk.

## CONCLUSION

There is a burgeoning literature around the disclosure of same-sex behavior by Black/African American men who have sex with men. However, it is difficult to draw conclusions given the small number of studies, that studies utilized small and/or nongeneralizable samples, and there have been great changes in the social and political environment regarding same sex behaviors that have occurred since the conduct of some of the older studies. Research should continue to study disclosure and additional efforts should be spent in exploring the factors associated with disclosure, developing a conceptual basis to systematically study this behavior, and understanding how HIV risk is associated with disclosure.

TABLE

Table 2.1 Review of studies on disclosure of same-sex behavior by Black/African American men who have sex with men

First author, year	Objective, study design, population description/source <sup>†</sup> (% Black/African American)	Target of disclosure	Results	Review question *
Benoit, 2012	<u>Objective:</u> Examine the role of substance use on sex with men and reasons for disclosing or not disclosing to FSP <u>Study design:</u> Qualitative, semi-structured interview <u>Population/source:</u> N = 33 (100%) - Black/African American - Not identify as gay or homosexual - Main current partner is female - Sex with men at least once in the past year	Female sex partner	- 73% not disclose to female partners - May disclose when learn more about partner, commitment - Disclosers identify as bisexual more often than non-disclosers - Disclosure lead to discussions of safer sex	Q1-Q5
Bernstein, 2008	<u>Objective:</u> Examine sociodemographics and behavioral factors associated with disclosure <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 452 (59.6%) - New York City National HIV Behavioral Surveillance - At least 1 male sex partner in the past year - Self-reported HIV negative	Health care provider	- 40% of Black MSM disclosed to HCP - Each racial/ethnic group (vs. White) and had female partner in past year less likely to disclose - Ever tested for HIV and born in US more likely to disclose	Q1-Q4
Bing, 2010	<u>Objective:</u> Review current knowledge and remaining questions to curtail HIV epidemic among AAMSM <u>Study design:</u> Review <u>Population/source:</u> N/A	N/A	- Community and family discrimination may be related to lack of disclosure and make it harder to reach population with prevention messages - Recommend support of and to conduct research to determine effective ways to	Q3

			decrease discrimination - Recommend intervention development to assist and support AAMSM who wish to disclose	
Bingham, 2013	<u>Objective:</u> Investigate association between gender role conflict and psychological distress and HIV-related risk behavior <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 400 (100%) - Black/African American - Sex with women and men in the past 24 months - Unprotected vaginal or anal intercourse in past 3 months	Any female sex partner, health care provider, or family members	- Disclosure was lower for men with higher gender role conflict	Q1, Q3
Chu, 1992	<u>Objective:</u> Describe AIDS in homosexual and bisexual men <u>Study design:</u> Cross-sectional, nationally reported AIDS cases <u>Population/source:</u> N = 65,389 (18%) + 3,555 (not stated) - 65,389 men who reported having sex with men - 3,555 women who acquired HIV through heterosexual contact	Female sex partner	- 11% of women reported sexual contact with a bisexual men - Rate for AIDS due to sex with bisexual man 5x higher for Black women (vs. White women)	Q1, Q3
Dodge, 2008	<u>Objective:</u> Learn about sexual risk, protective, disclosure behaviors <u>Study design:</u> Qualitative, in-depth interview <u>Population/source:</u> N = 30 (100%) - 18-30 years old - Sex with at least one man and one woman in	Female sex partner	- 44% of female partners disclosed to - More likely to disclose to bisexual partners if in longer-lasting and more serious relationship	Q1-Q3

	the past year - Inconsistent condom use			
Dodge, 2012	<u>Objective:</u> Understand preferences for health-related services <u>Study design:</u> Qualitative, in-depth interview <u>Population/source:</u> N = 75 (33.3%) - Sex with at least one man and one woman in the past 6 months	N/A	- Concerned about inadvertent disclosure - Others' perceptions of their sexuality influence whether engage in health services - Recommend provide health information pertinent to all men to prevent inadvertent disclosure - Fear of disclosure, desire for privacy, and anticipation of stigma from gay men limited participants' interactions at gay-identified venues	Q3
Doll, 1996	<u>Objective:</u> Review literature on male bisexuality and HIV risk and make recommendations for HIV intervention and research <u>Study design:</u> Review <u>Population/source:</u> N/A	N/A	- Less than half of bisexual men disclose to FSP - Present heuristic model to examine the relationship between male bisexual behavior and HIV risk	Q1, Q2
Goparaju, 2012	<u>Objective:</u> Examine knowledge, attitudes, beliefs, and behaviors of "down low" men <u>Study design:</u> Qualitative, focus group <u>Population/source:</u> N = 36 (100%) - African American women - Washington, DC Interagency HIV Study	N/A	- Themes about African American women's perspectives: awareness, suspicion, coping with partner infidelity, sexual health communication, empathy and religion	Q5
Jimenez, 2003	<u>Objective:</u> Needs assessment for community-based organization <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 110 (89%) - 50 years or older	Friends, family members	- 37% disclosed to < half or no friends - 53% disclosed to <1/2 or no family members	Q1, Q2

	- Sex with a man in the past 12 months			
Kenamer, 2000	<u>Objective:</u> Describe disclosure, association with gay, lesbian, and bisexual associations or gay/bisexual friends <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = Not stated (27%) - Complex non-probability sampling of state - MSM	Family members, heterosexual friends, gay friends, health care workers, co-workers, church members	- African American men much less likely to disclose for all targets, participate in LGB groups, have gay/bisexual friends (vs. White) - As education increased, % who disclosed decreased for AA men	Q1-Q3
Kipkie, 2007	<u>Objective:</u> Describe club drug use and associated risk factors <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 496 (24%) - Venue-based probability sampling - 18-22 years old - Self-identified as gay, bisexual, or uncertain about sexual orientation and/or reporting sex with a man - Resident of Los Angeles	Family, best or closest friends, other friends	- 15% of sample disclosed to no family - 91% & 71% of sample disclosed to best/closest friends or other friends, respectively - Disclosure to most/all of family members associated with recent club drug (vs. disclosure to no family)	Q1-Q3
Latkin, 2011	<u>Objective:</u> Examine correlates of disclosure <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 187 (100%) - African American MSM	Social network	- 8% of indexes disclosed to none of the network; 16%, half; 24%, 51%-99%; 52%, all - Disclosure more frequently by men who were younger, higher education, HIV	Q1-Q3

			positive - Disclosure more frequent to network members who were HIV positive, provided emotional support, socialized with the participant, and not a FSP	
Lo, 2012	<u>Objective:</u> Examine prevalence and factors associated with recent HIV testing <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 339 (17%) - 2008 National HIV Behavioral Surveillance in St. Louis - Sexually active MSM - Negative or unknown HIV status (12 months before interview)	Health care provider	- 73% had disclosed - More likely to have been recently HIV tested if disclosed - Of participants who had both visited HCP in past 12 months and disclosed, 71% had been tested (vs. 15% of participants who had done neither)	Q1-Q4
Magnus, 2010	<u>Objective:</u> Examine HIV risk behaviors <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 500 (26%) - 2008 National HIV Behavioral Surveillance in Washington, DC - MSM	Family members, non-gay identified friends, health care provider	- 85% of BMSM disclosed to family member; 86%, non-gay identified friend; 72%, health care provider - BMSM less likely disclose to HCP or non-gay identified friend (vs. White) - Primary risk of HIV infection among Black MSM may include barriers to disclosure	Q1-Q4
Magnus, 2010	<u>Objective:</u> Evaluate the association between organizational- and individual-level characteristics and retention in HIV care <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 224 (73%) - Enrolled in 1 of 8 Special Projects of National Significance-funded demonstration sites	None stated	- 98.2% of sample disclosed before HIV diagnosis	Q1, Q2

	<ul style="list-style-type: none"> <li>- HIV-positive (diagnosed within 30 days or reengaged in care in the past 30 days after being out of care for at least 6 months)</li> <li>- Sex with men or had intent to have sex with men</li> <li>- Self-identified as nonwhite</li> <li>- 13-24 years old</li> </ul>			
Malebranche, 2010	<p><u>Objective:</u> Explored factors influencing sexual behavior, disclosure, and condom-use</p> <p><u>Study design:</u> Qualitative, semi-structured interviews</p> <p><u>Population/source:</u> N = 38 (100%)</p> <ul style="list-style-type: none"> <li>- 18-45 years old</li> <li>- Resided in Atlanta metropolitan area</li> <li>- Sex with a man and woman in the past 6 months</li> </ul>	Disclosure in general, intimate relationships	<ul style="list-style-type: none"> <li>- Disclosure influenced by situational context or individual sexual-partner considerations (gender, trust, history with)</li> <li>- Disclosure ranged from full to total secrecy</li> </ul>	Q1, Q3, Q5
Maulsby, 2013	<p><u>Objective:</u> Examine HIV risk among men who have sex with men and women</p> <p><u>Study design:</u> Cross-sectional, survey</p> <p><u>Population/source:</u> N = 399 (71%)</p> <ul style="list-style-type: none"> <li>- National HIV Behavioral Surveillance in Baltimore</li> <li>- Self-reported not HIV positive at time of survey</li> <li>- Sex with a man in the past 12 months</li> </ul>	Gay, lesbian, or bisexual (GLB) friends, non-GLB friends, family members	<ul style="list-style-type: none"> <li>- 8% of sample disclosed to no one; 6%, gay friends only; 86%, family and non-gay friends</li> <li>- MSMW more likely to have disclosed to family and non-gay friends (vs. MSM only (MSMO))</li> <li>- MSMW more likely to not be out to anyone or out to gay friends only (vs. MSMO)</li> <li>- Among MSMW, disclosing positively associated with UAI with male partners</li> </ul>	Q1-Q4
McKirnan, 1995	<u>Objective:</u> Describe social characteristics and sexual behavior	9 people or groups	- On average, disclosed to 3 people or categories	Q1, Q2

	<u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 536 (52%) - Sex with a man and woman in the past 3 years - 18-30 years	(e.g., father, mother, siblings, close male friends)	- 33% disclosed to 1 or none - Blacks disclosed less than Whites	
Millett, 2005	<u>Objective:</u> Review of literature on men on the down low <u>Study design:</u> Review <u>Population/source:</u> N/A	N/A	- Black MSM less likely to disclose - Non-disclosure associated with lower prevalence of HIV risk	Q1-Q4
Millett, 2006	<u>Objective:</u> Examine 12 hypotheses to explain racial disparity among Black MSM <u>Study design:</u> Review <u>Population/source:</u> N/A	N/A	- Hypothesis: Black MSM less likely to identify as gay or to disclose, which may lead to increased HIV risk behavior not supported by the scientific evidence	Q1- Q4
Millett, 2007	<u>Objective:</u> Identify factors that contribute to racial disparity between Black and White MSM <u>Study design:</u> Meta-analysis <u>Population/source:</u> N/A	N/A	- Black MSM report less disclosure - Insufficient quantitative data to perform meta-analysis about association between nondisclosure and HIV risk	Q2, Q4
Millett, 2011	<u>Objective:</u> Identify demographic, behavior, and psychological variables associated with being HIV-positive unaware <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 1208 (49%) - Sex with a man in the past 12 months - Resident in New York City or Philadelphia - Respondent-driven sampling	Doctor or health care provider	- 22% disclosed (among BMSM) - Being HIV-positive unaware associated with disclosure (42% disclosed vs. 18% of HIV uninfected among BMSM)	Q1, Q2, Q4
Montgomery, 2003	<u>Objective:</u> Describe sexual identity and bisexual behavior in men and women who acknowledged	N/A	- Fewer Black women reported having a bisexual partner (vs. White women, 6%	Q1-Q3



	<p>having a bisexual partner</p> <p><u>Study design:</u> Cross-sectional, survey</p> <p><u>Population/source:</u> N = 5,156 (31%) + 3,139 (31%)</p> <ul style="list-style-type: none"> <li>- Supplement to HIV/AIDS Surveillance project (12 state or local health departments)</li> <li>- 5,156 HIV-infected men who have had sex with a man in the past 5 years</li> <li>- 3,139 HIV-infected women who had sex with a man in the past 5 years</li> </ul>		<p>vs. 14%)</p> <ul style="list-style-type: none"> <li>- Proportion of BMSM who reported having sex with a woman was higher than white MSM (34% vs. 13%)</li> <li>- Female partners of BMSM disclosed to less</li> </ul>	
Saleh, 2011	<p><u>Objective:</u> Explore beliefs and experiences of community-based service providers and MSMW regarding HIV prevention education and counseling to MSMW</p> <p><u>Study design:</u> Qualitative, focus group, interviews</p> <p><u>Population/source:</u> 21 (100%) + 21 (100%)</p> <ul style="list-style-type: none"> <li>- 21 staff members from community-based organizations</li> <li>- 21 men who have a history of having sex with both men and women, not identify as gay or homosexual</li> </ul>	N/A	<ul style="list-style-type: none"> <li>- Critical attitudes towards MSMW non-disclosure from community-based staff</li> <li>- MSMW identified barriers to openly discussing sexuality</li> <li>- Recommendations by MSMW for HIV prevention services: one-on-one, provide options to choose male or female counselor and opportunity to change counselors, not explicitly refer to same-sex behavior while doing outreach, use social networks, frame HIV as part of general Black men's health, employ staff who do not threaten men's sense of masculinity</li> </ul>	Q3
Schrimshaw, 2013	<p><u>Objective:</u> Identify venues where MSMW meet male sex partners and strategies used to reduce likelihood of being discovered</p> <p><u>Study design:</u> Cross-sectional, survey; Qualitative, semi-structured focused interview</p>		<ul style="list-style-type: none"> <li>- Strategies to avoid discovery: avoid certain venues, attend venues far from home, meet men via the internet, venues with a potential nonsexual use, sex at partner's place,</li> </ul>	Q5

	<u>Population/source:</u> N = 46 (41%) - Not publically or privately self-identify as gay - Sex with a man in the past year - Sex with a woman in the past year to whom married or had ongoing relationship lasting at least three months - No disclosure to FSP in the past year - Resided in New York City metropolitan area			
Shearer, 2012	<u>Objective:</u> Describe extent MSMW disclose and association between disclosure and condom use <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 666 (13%) - Online survey on Myspace.com - Sex with at least one man in the past 12 months - Resided in the United States	Female sex partners	- 70% disclosed - BMSMW, heterosexual identity less likely to disclose (vs. White MSMW, bisexual) - Homosexual identity more likely to disclose (vs. bisexual) - Unknown HIV status less likely to disclose (vs. HIV negative) - Discussed HIV status with FSP more likely disclose - Disclosure not associated with condom use during last vaginal sex	Q1-Q4
Siegel, 2008	<u>Objective:</u> Examine sexual behaviors <u>Study design:</u> Cross-sectional, survey; Qualitative, semi-structured focused interview <u>Population/source:</u> N = 46 (41%) - Not self-identify as gay - Sex with a man in the past year - Sex with a woman in the past year to whom married or had ongoing relationship lasting at least three months	N/A	- More male partners than FSP - More frequent sex with female partners (vs. male) - Differences in sex behaviors between male and female partners - More unprotected sex with steady or committed partners (vs. casual) - No differences in number of male or female partners between live with or not	Q4

	<ul style="list-style-type: none"> <li>- No disclosure to FSP in the past year</li> <li>- Resided in New York City metropolitan area</li> </ul>		<ul style="list-style-type: none"> <li>live with a female partner</li> <li>- BAA less likely to report receptive sexual behaviors with men</li> </ul>	
Stokes, 1996	<p><u>Objective:</u> Examine ethnic differences in psychosocial variables and sexual behavior</p> <p><u>Study design:</u> Cross-sectional, survey</p> <p><u>Population/source:</u> N = 750 (66%)</p> <ul style="list-style-type: none"> <li>- African American or White</li> <li>- 18-30 years old</li> <li>- Sex with a man in the past 3 years</li> </ul>	7 people or groups (e.g., father, mother, siblings, close male friends)	<ul style="list-style-type: none"> <li>- Behaviorally gay men disclosed more than bisexual men for both ethnic groups</li> <li>- White men disclosed more (vs. Black)</li> <li>- White behaviorally gay men less self-homophobic and more likely to have disclosed than Black behaviorally gay men</li> </ul>	Q1-Q3
Stokes, 1996	<p><u>Objective:</u> Examine disclosure of and factors associated with bisexually active men</p> <p><u>Study design:</u> Cross-sectional, survey</p> <p><u>Population/source:</u> N = 350 (59%)</p> <ul style="list-style-type: none"> <li>- African American or White</li> <li>- 18-30 years old</li> <li>- Sex with a man and woman in the past 3 years</li> </ul>	Female sex partner	<ul style="list-style-type: none"> <li>- 71% of FSP and 59% of steady FSP in past 6 months not aware (overall sample)</li> <li>- 61% of AA reported that no female partners knew; 17%, all</li> <li>- White men more likely disclosed to FSP and steady FSP (vs. AA)</li> <li>- Perceived acceptance of network members and friends of homosexual behavior associated with disclosure</li> <li>- AA described community and social networks less accepting of homo</li> <li>- Only age associated with disclosure to steady partner; younger men more likely</li> <li>- No difference between disclosers and non-disclosers for # of male partners (MSP) in past 6 months, condom use with MSP, or unsafe sex with MSP</li> <li>- Non-disclosers had more FSP and used</li> </ul>	Q1-Q4

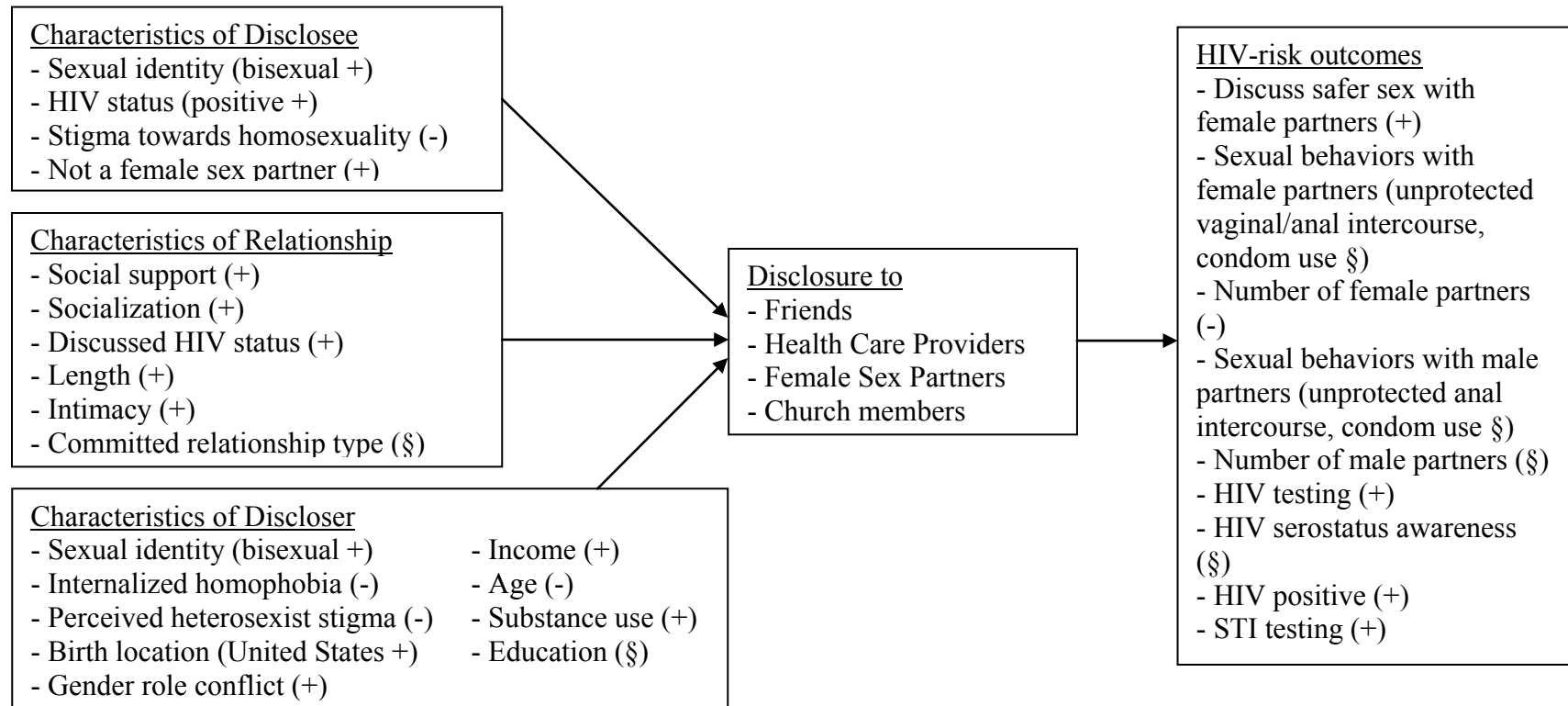
			condoms less consistently - Having a steady FSP not associated with disclosure or moderating disclosure & psychosocial variables	
Tai, 2008	<u>Objective:</u> Evaluate implementation of Centers for Disease Control and Prevention guidelines to annually test MSM for gonorrhea and Chlamydia <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 10,030 (17%) - National HIV Behavioral Surveillance - Sex with a man in the past 12 months - Not HIV-positive	Health care provider	- 66% disclosed (overall sample, no ethnicity break down) - Disclosure positively associated with syphilis and gonorrhea testing	Q1, Q2, Q4
Tieu, 2012	<u>Objective:</u> Compare sociodemographics characteristics and risk behaviors between BMSMW and BMSMO <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 326 (100%) - Resided in New York City - $\geq 2$ sexual partners - Unprotected anal intercourse with a man in the last 3 months - Self-identification as transgender woman ineligible	Female sex partner	- 72% of the MSMW disclosed to female partners - MSMW having any UVAI were less likely to disclose (vs. MSMW having only protected sex)	Q1, Q2, Q4
Valera, 2011	<u>Objective:</u> Explore relationship of homosexuality and Black church <u>Study design:</u> Qualitative, semi-structured interview <u>Population/source:</u> N = 9 (100%) - 30-60 years old	N/A	- Use specific strategies to conceal same-sex attractions, manage religious traditions and same-sex behavior - Pervasive experiences growing up in heterosexist environments	Q3

	<ul style="list-style-type: none"> <li>- Married to a woman</li> <li>- Sex with a man in the past 6 months</li> </ul>			
Wheeler, 2008	<u>Objective:</u> Compare demographic, health, and behavioral risk between BMSMW and BMSMO <u>Study design:</u> Cross-sectional, survey <u>Population/source:</u> N = 1,154 (100%) <ul style="list-style-type: none"> <li>- Respondent-driven sampling</li> <li>- Resided in New York City and Philadelphia</li> <li>- Sex with another man in the past 12 months</li> </ul>	Not stated	<ul style="list-style-type: none"> <li>- 89% of sample disclosed</li> <li>- MSMW less likely to disclose to at least one other person compared to MSMO (75% vs. 94%)</li> <li>- No association between disclosure and receptive/insertive UAI</li> </ul>	Q1, Q2, Q4, Q5

<sup>†</sup> Sample was male and adult ( $\geq 18$  years) unless otherwise stated. <sup>\*</sup> This number relates to the review questions labeled 1 through 5 in the introduction.

## FIGURE

Figure 2.1 Summary of Characteristics Associated with Disclosure, Disclosure Targets, and HIV-risk Outcomes



*Note.* + denotes a positive association; this factor is associated with greater likelihood of disclosure or this outcome is present more often among disclosers. - denotes a negative association; this factor is associated with lower likelihood of disclosure or this outcome is present more often among non-disclosers. § denotes findings are mixed.

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## **CHAPTER THREE: RESEARCH METHODS**

This chapter provides detailed information about the methods used in the following manuscript papers. In particular, given the secondary data analysis conducted, this chapter provides a substantial background of the data collection and creation of the “original data” from which a subset is used.

#### AIMS

The general aim is to explore how the social environment influences disclosure of same-sex behavior by Black/African American men who have sex with men (BAAMSM) living in Baltimore, MD. In particular, two targets of disclosure are of interest: health care providers (HCPs) and female sex partners (FSPs) among the men who have sex with both men and women (MSMW).

#### RESEARCH QUESTIONS

Thus, there are a set of research questions to understand disclosure to health care providers and another set of research questions to understand disclosure to female sex partners. Each set of research questions is the focus of a specific chapter.

First, the research questions with respect to HCPs are as follows.

RQ1a. Which social network characteristics are associated with men disclosing to their health care providers?

RQ1b. Which MSM-characteristics are associated with disclosure?

The following are research questions to understand disclosure to FSPs by MSMW.

RQ2a. To which female sex partners are disclosed?

RQ2b. What relationship, FSP, and MSMW characteristics are associated with disclosure?



RQ2c. How is disclosure associated with condom use with female sex partners?

#### SOURCE OF STUDY DATA

Data for this dissertation come from a network-oriented intervention to reduce HIV and sexually transmitted infections (STIs) related risk behaviors among African American men who have sex with men (AAMSM). This intervention project, titled Unity in Diversity (UND), was one of six projects funded by the Centers of Disease Control and Prevention (CDC) to evaluate newly developed behavioral interventions designed to reduce HIV among African American/Black (4 sites) and Hispanic/Latino MSM (2 sites). The CDC provided technical assistance, including consultation about study design, monitoring, and study progress, conducting site visits, performing data analysis and dissemination, presenting results at scientific meetings, and preparing manuscripts for publication.

As secondary data analyses of the baseline data were conducted for the dissertation, the recruitment, enrollment, and survey measures of UND are presented first. Then, the methods specific for the dissertation are presented. While the UND project is an intervention evaluation, because only baseline data were used, the following text does not discuss follow-up assessment, the randomization procedure of participants into the intervention group or control condition, or intervention development. Please see the published article, (1), for more details on these matters.

#### *Sample*

Two different types of participants were recruited to join the study: primary and secondary participants. Primary participants (also referred to as Primaries) are AAMSM

with behavioral HIV risk factors. They recruited persons from their social network into the study for baseline and 3-month follow-up assessment. The network member recruited by the primary participant is referred to as the secondary participants (or Secondaries).

### *Recruitment*

#### Primary Participants

Primary participants were recruited from four different sources: venues, print advertisement, referrals, and Internet, from August 2007 through August 2008. The identification of these sites and avenues were determined by the research team's knowledge of the AAMSM community and recommendations from the community advisory board and key informants.

Venues included bars, clubs, cafes, restaurants, and college campuses. Recruiters underwent extensive training in ethical guidelines regarding professional conduct and in how to approach and engage potential study participants. Each person approached was given a project recruitment flyer that provided basic information regarding the study. Potential participants were given information about the nature of the study, the time involved, and informed that they would be financially reimbursed for their time. In order to reduce potential embarrassment or inadvertent disclosures, the script included the comment, "If this doesn't apply to you, please give it to someone you know."

Print advertisements were placed in city and university-based newspapers. Specifically, ads were placed in City Paper, Gay Life, and Morgan State Sentinel.

Referrals were made from agencies that provide services to African American MSM. Recruitment fliers were left with local agencies. These agencies were primarily

health-focused, including the Men and Family Health Center, Moore Clinic, and Chase Brexton.

Potential participants were also reached through websites that catered to African American MSM, such as Gay Black Chat and Adam4Adam. Using a predetermined script, a member of the research team engaged in chat with potential participants. Project staff set up a screen name reflective of the intervention and profile that contains a brief description of the study and the research center's toll-free telephone number and a contact email address. Recruiters were present in chat rooms and attempted to approach every user in the chat room. When chat room users were approached, the recruiter followed a similar script to those used in non-Internet recruiting venues and directed the potential participants to the research center phone number for eligibility screening.

#### Secondary Participants

After all survey instruments had been completed, Primaries were informed that they could recruit up to five people from their social network into the study. Based on the information gathered during the Social Network Inventory (see below for more details), the research staff informed the primary participants which network members were eligible (see next section for eligibility criteria) and provided the primary participants five cards to give to their social network members. Primaries were also provided with brochures to give their network members that served as an invitation to the study and provided information about the study and procedures for enrolling. Interviewers instructed Primaries to emphasize to their networks that study participation is voluntary and to not place undue stress or pressure on network members to enroll. Primary participants received \$10 for every Secondary who completed the baseline visit.

## *Screening*

Potential primary participants underwent a two-step screening process. First, potential participants completed a telephone-based survey after giving verbal consent to be screened. Using computer assisted technology, the interviewer administered an instrument and entered the potential participants' responses. Eligibility was determined by the computer program based on participant responses. Eligible participants were then scheduled to complete an in-person screening.

During the in-person screening, potential participants completed a screening that was administered using audio computer-assisted self-interview (ACASI) technology to determine behavioral eligibility. All participants, regardless of eligibility, received \$20 for completing the in-person screening. Eligible individuals were then scheduled to complete the baseline visit and be enrolled in the study.

The enrollment criteria for primary participants were 1) be 18 years or older, 2) identify as male, 3) self-report black, African, or African American race/ethnicity, 4) have at least two sexual partners in the prior three months (at least one of whom must be male), 5) report unprotected anal sex with a male partner in the prior three months, 6) report willingness to invite a network member into the study, 7) report willingness to conduct HIV prevention outreach, and 8) report willingness to take an HIV test if HIV negative or unknown status or provide documentation of HIV-positive status, otherwise to take an HIV test. Primary participants were excluded if they 1) identified as female or transgender, 2) were under the age of 18, 3) did not self-report African American ethnicity, 4) did not report having two or more sex partners in the prior three months, 5) did not report a male sex partner in the prior three months, 6) did not report unprotected

anal sex with a male partner in the prior three months, or 7) participated in an HIV prevention or education program in the past six months.

Secondary participants did not undergo the two-step screening process. Based on the information provided during the Primaries' baseline visit, the interviewers informed primary participants which of their network members were eligible to participate in the study.

The enrollment criteria for secondary participants were 1) being aged 18 years or older, 2) a) someone who had sex with the primary participant or b) nominated by the primary participant as someone who could benefit from an HIV prevention program (e.g., someone who used heroin, cocaine, or crack in the prior three months, the internet to find sex partners, or the primary participant talks with about HIV and STIs), and 3) has weekly contact with the primary participant. Secondary participants were excluded if they were younger than 18 years of age or had less than weekly contact with the Primary.

#### *Baseline Data Collection*

Baseline data were collected from August 2008 through October 2009. During the baseline visit, all participants completed written informed consent procedures, completed a survey, and underwent HIV testing.

#### Survey

Briefly, the survey consisted of three sections: cross-site assessment (CSA), network inventory, and site-specific survey. The CDC led the development of the CSA portion with researchers across the six sites suggested scales and measures. Specific details about measures that are relevant for the dissertation are described in later sections.

The CSA was administered using ACASI to collect information about sociodemographics, sexual risk, drug risk, and covariates (such as, perceived responsibility, condom attitudes, and discrimination). This portion was estimated to take 30-45 minutes.

Participants then completed a social network inventory that was administered face-to-face by a trained research assistant. The network inventory was used to collect information about participants' support network and drug or sex network. This section was estimated to take 20-30 minutes to complete and was audio recorded.

After completing the network inventory, the site-specific survey was administered. This portion assessed a number of covariates, including social norms, health communication, transience, and medical care for persons living with HIV. It was expected to take 15-20 minutes and was audio recorded.

#### HIV Testing

Participants who self-reported not knowing their HIV serostatus or an HIV negative serostatus were tested for HIV antibodies using the OraQuick Advance oral specimen rapid antibody test kit (OraSure Technologies, Inc., Bethlehem, PA) and were provided pre- and post-testing counseling. Participants who reported being HIV positive serostatus had been asked at the second screening to bring in documentation at the time of the baseline visit. Appropriate documentation included photo identification and one of the following: a filled prescription bottle with his/her name on it; a letter from his/her physician, provider, or agency (including a case manager) that stated the participant's name and positive HIV status; AIDS Drug Assistance Program documentation; or a positive test result with the participant's name. If appropriate documentation was not

provided, participants were asked if they would be willing to have their provider fax their results or have an HIV test. If they declined, they were asked to bring in documentation within 5 days. If participants had not provided documentation within 5 days, they were told they needed to undergo HIV testing in order to be included in the study.

For each participant who underwent testing, oral fluid specimen was collected using the OraQuick oral specimen collection device by swabbing the lower and upper outer gums. The device was then inserted into the OraQuick development solution and vial. Results are typically available within 20 to 40 minutes. During this period, participants received prevention counseling. Specimens were not stored and were discarded after testing. Study staff had been trained by the OraSure Technologies company and the Maryland State AIDS Administration on how to collect specimens and provide prevention counseling.

Participants whose test results were negative were notified of the results and received prevention counseling based on CDC voluntary testing and counseling guidelines. Participants whose test was reactive were informed of their preliminary positive test results and received prevention counseling.

For participants who learned that they may be HIV positive for the first time, 6 cubic centimeters of blood were drawn by a trained phlebotomist and then tested at a Johns Hopkins Bloomberg School of Public Health laboratory. The blood specimen was tested for the presence of HIV antibodies by ELISA and then HIV positive serostatus was confirmed by performing a Western Blot. Results were available within 7 days. Participants who had tested preliminarily positive were scheduled to return for test results within 7 days of the baseline visit. If the confirmatory test was positive, participants were

referred to appropriate counseling and medical services. The research team has a comprehensive resource guide that includes information about agencies that provide services, including healthcare, drug treatment, and housing.

### *Data Cleaning*

The Centers for Disease Control and Prevention cleaned the cross-site assessment portion of the survey. Any issues that may have affected these data were communicated by the study site to the CDC. Each month, the CDC performed a series of site- and instrument-specific data validation checks, including checks for out-of-range, missing, duplicate IDs, and numerous logic checks.

Of the portions that were audio recorded, trained personnel listened to 20% of those audios and noted data entry errors and errors in survey administration protocol. After reviewing the errors, the site data manager made corrections as necessary.

### HUMAN SUBJECTS PROTECTION

All protocols were approved by the Institutional Review Board at the Johns Hopkins Bloomberg School of Public Health and Centers for Disease Control and Prevention.

### DISSERTATION DATA SET

The experiences of two different groups were examined, AAMSM and AAMSMW. Therefore, two different subsets of the UND baseline data were created.

In the first manuscript paper, data from all AAMSM were analyzed. The eligibility criteria for this sample were 1) reported having anal sex with at least one man in the last 3 months, 2) self-reported as Black or African-American, and 3) identified as male or transgender.



In the second manuscript paper, the sample was limited to a subset of African American men who have sex with men, African American men who have sex with both men and women. The eligibility criteria were 1) reported having anal sex with at least one man in the last 3 months, 2) self-reported as Black or African-American, 3) identified as male or transgender, and 4) reported at least one female with whom he had sex in their social network.

## MEASURES

### *Variables of interest*

#### Sociodemographics

Participants were asked to report their age, education, income, employment, religion, incarceration, sexually transmitted infection history in the past 3 months, HIV status, sexual identity, health insurance, number of doctor visits, and location used for medical care. See Table 3.1 for a summary of how the variable was originally measured and for any manipulations that occurred.

For manuscript 2, HIV status was a categorical variable with 3 levels: negative; positive; unknown. For manuscript 3, due to the sample size, HIV status was categorized as 2 levels: positive; negative or unknown.

Two different classifications were made for sexual identity. In manuscript 2, the following 3 categories were used: homosexual; bisexual; heterosexual or other. In manuscript 3, sexual identity was a dichotomous variable (homosexual, gay, or other; heterosexual).

#### Substance use

Two forms of substance use data were collected. Participants reported on their own substance use (used in both manuscripts) and their female sex partners' substance use (for manuscript 3 only). Participants were asked to describe the frequency they used 9 different substances (marijuana, ecstasy, powdered cocaine, crack cocaine, methamphetamines, Amyl Nitrate, club drugs, heroin, prescription drugs). Each substance use was dichotomized to represent use in the past 3 months or no use in the past 3 months. Participants also described whether or not their female sex partners used 4 different substances (heroin, crack, cocaine, methamphetamines) or injected any drugs. All use was reported for the last 3 months.

#### Risky alcohol use

The AUDIT-C (2) was used to assess whether participants met criteria for alcohol use disorders. The AUDIT-C consists of 3-items about alcohol consumption and has been validated as a screening test. Items cover frequency of alcohol drinking, quantity (i.e., number of drinks on a typical day), and frequency of binge drinking. Each item is scored from 0 to 4. Using this continuous variable, a dichotomous variable was created using a cutoff score of 4, as this score suggests risky drinking and reflects the best combined sensitivity and specificity compared to other cutoff scores (3).

#### MSM-based discrimination

This 11-item scale measured the frequency of experiencing MSM-based discrimination while growing up and as an adult (4). Individuals reported on a 4-point scale (never, once or twice, a few times, many times) how often various incidences occurred, such as being made fun of, or harassed by police. For this study, the scale has good internal consistency (Cronbach's  $\alpha = .80$ ). To make the variable more

meaningful, it was dichotomized such that those who had experienced discrimination at least “a few times” on 6 out of the 11 items were classified as experiencing high discrimination.

#### Medical distrust

A shortened version of the Group-Based Medical Mistrust Scale was used to assess medical distrust. This scale measures experiences of medical discrimination, support from health care providers, and suspicions of health care providers. It was originally developed and validated with a sample of Latino and African-American women (5) and has been validated in a sample of urban Black men (6). Participants rated 9 statements on a 5-point scale from strongly agree to strongly disagree (Cronbach’s  $\alpha = .83$ ). To make the variable more meaningful, it was dichotomized to represent high medical distrust and low medical distrust. Those with high medical distrust agreed or strongly agreed on all the items.

#### Depressive symptoms

The Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure depressive symptoms. Participants rated how often they experienced 22 symptoms on a 4-point scale, ranging from rarely or none of the time (<1 day a week) to most or all of the time (5-7 days a week). Using this continuous variable, a dichotomous variable was created. A score of 16 suggests a clinically significant level of depressive symptoms (7). The CES-D has been shown to have good reliability and validity for diverse populations (7-9)

#### Internalized homophobia

A modified version of the scale Martin and Dean (1987) created was used to measure internalized homophobia. This scale is popularly used to measure internalized homophobia. In the original scale, 9 items were used. This modified version consisted of 4 items and participants reported their agreement on a 5-point scale (strongly disagree, disagree, neither disagree nor agree, agree, or strongly agree). An example statement is “Sometimes I dislike myself for being sexually attracted to men.” In this study, there was high internal consistency (Cronbach’s alpha = 0.89). Using median split, this variable was dichotomized as having high internalized homonegativity or not.

### Sexual history

Recent (past 3 months) sexual history was measured using the CDC National HIV Behavioral Surveillance (NHBS) questionnaire. The NHBS was created in 2003 and collects information about men who have sex with men, injection drug users, and heterosexuals at high risk for HIV infection in 20 jurisdictions (as of 2011) with high AIDS prevalence (10). The populations surveyed rotate annually. The NHBS measures a variety of sexual behaviors and provides data about the sexual behaviors both globally and with specific partners. For this study, focus was placed on the participants’ reports of the number of sexual partners they had in the past 3 months by the gender of the sex partner (i.e., male, gender, transgender), condom used during the last time they had anal sex with their most recent male sexual partner, HIV status of the most recent male partner, and exchange sex during most recent anal sex with the last 3 male partners.

### ***Sex with women***

If participants reported having sex with at least one woman in the past 3 months, this continuous variable was dichotomized.

### ***Unprotected anal intercourse***

Participants were asked to report condom use during the last time they had anal sex with their most recent male sexual partner when they were the insertive partner (i.e., top) and the receptive partner (i.e., bottom). If a condom was not used in either position, then the classification of unprotected anal intercourse was made.

### ***Exchange sex***

Participants reported whether they had received money or drugs to have sex with their last 3 male partners. If money or drugs was received from any one of these partners, then the participant was classified as having exchanged sex.

### **Relationship and female sex partner characteristics**

In order to learn about the dyadic relationship between the MSMW and FSPs and the FSP characteristics, data from the social network inventory were used. The social network inventory was a modified version of the Arizona Social Support Inventory (11, 12). This measure has established internal consistency, reliability, and concurrent and predictive validity (11, 13-15).

The first part of the social network inventory asks participants to provide a list of individuals who provide social/recreational and material support, health advice, and with whom they hang out, use drugs, and have sex. Emotional support was measured by, “who[m] did you talk to about things that were personal and private or who did you get advice from?” Material support was measured using the following question: who pitched in to help you do things that you needed some help with such as running errands, giving you a ride, etc? To measure financial support, participants were asked who loaned or gave you some money.

Participants were asked to provide the first name and first three letters of the last name of each individual. If participants were unwilling, a nickname or initials of each person was recorded for the purposes of keeping clear who participants were talking about as they completed the inventory.

After all the names were generated, participants were asked to describe each social network member, including age, race, gender, current employment status, relationship, length known, socialization frequency, whether they lived with the network member, level of trust, HIV status, lifetime STI, drug use (heroin, crack, cocaine, methamphetamine, injection drug use), whether s/he knew the participant had sex with men, and whether they were not on good terms.

Additionally, for sex partners, participants reported the date they first had sex, the date they last had sex, partner type, condom use, whether the network had other sex partners, and quality of communication. The following definitions were presented to participants so they could classify their sexual partners into one of three types of partnerships: main, casual, or exchange. A main partner is someone you have a relationship with, like a spouse or lover, boyfriend or girlfriend. A casual partner is someone that you hook up with from time to time to have sex. An exchange partner is someone you have sex with in exchange for food, money, shelter or drugs.

FSP characteristics are the following: age, race, current employment status, HIV status, lifetime STI, drug use, and whether she had a partner outside of this dyad.

Relationship characteristics are the following: age difference, race concordance, used drugs with, seroconcordant, length known, socialization frequency, social support, partner type, trust, conflictual relationship, communication quality, and financial

dependence. Age difference, race concordant, and seroconcordant variables were created and described below. Length known, socialization frequency, trust, and quality of communication, and financial dependency were modified (see Table 3.1).

### ***Age difference***

The difference in age between each participant and their female sex partners was calculated by subtracting the age of the female sex partner from the age of the participant. A positive score represents that the participant is older than his FSP.

### ***Seroconcordance***

Using self-reported HIV status of the MSMW and the reported HIV status of the FSPs, dyads were classified as either seroconcordant or not. Seroconcordant dyads were those in which a) both partners were HIV seropositive or b) the FSP was HIV seronegative and the MSMW was HIV seronegative or serostatus unknown.

### ***Race concordance***

As the sample of MSMW was all Black/African American, dyads were classified as race concordant if FSPs were reported as Black/African American.

### ***Length known***

Participants reported on how long they have known the FSP to the nearest year and month. The total number of months was calculated (number of years multiplied by 12 plus the number of months). Based on the distribution and to make the variable more interpretable, this variable was dichotomized at a cut point of 10 years.

### ***Socialization frequency***

Originally, participants reported how often they talked to or saw their social network members on a 5-point scale. For interpretation, this variable was collapsed into

three categories: frequently (at least once a week or every day), monthly (about once a month or a few times a month), and infrequently (a few times a year or less).

### ***Trust***

Participants rated how much they trusted each FSP on a 10-point scale ranging from “don’t trust at all” to “trust with my life”. This variable was dichotomized to compare those who had high trust (score of 10) in their partners to those who did not.

### ***Quality of communication***

Participants rated the quality of communication with each partner on a 4-point Likert-like scale: poor, fair, good, or excellent. This variable was dichotomized to compare dyads with good or excellent communication to those with poor or fair communication.

### ***Financial dependence***

Participants rated how dependent they were on their sex partners for money or a place to live on a 5-point scale from not dependent to very dependent. Because of the data distribution, this variable was dichotomized to identify those who were highly dependent (score of 4 or 5) and those who were not.

### **Social network composites**

In addition to using the social network inventory to collect data about specific female sex partners and dyadic relationship characteristics, it can also be used to create composite variables that describe the social network broadly. The Lighthouse data manager created the following composite variables: network size, size of enacted social support network, frequency of socialization, mean trust of network members, number of networks support is provided to, number of networks met in support group, and number



of networks participant has conflict with, and number of networks who knew the participant had sex with men. The following modifications were made. One variable to represent all network members knew the participant had sex with men was created.

#### ***Frequency of socialization***

In the original measure, higher values represented less frequent socialization (e.g., 5 = a few times a year or less, 1 = everyday). This composite variable was reverse coded to make it more interpretable.

#### ***Networks provided support to***

The original composite variable was continuous. This variable was dichotomized to represent whether the participant provided support to at least 1 network member.

#### ***Networks from support group***

The original composite variable was continuous. This variable was dichotomized to represent whether the participant met at least 1 network member in a support group.

#### ***Conflict with network***

The original composite variable was continuous. This variable was dichotomized to represent whether the participant had conflict with at least 1 network member.

#### ***Entire network knows participant is MSM***

The number of network members who knew the participant had sex with men was divided by the total network size (minus male partners; male partners were not included in the denominator because based on the behaviors they engaged in with the participant they would have known he had sex with men). If this quotient was equal to or greater than 1, then the entire network knew the participant is a man who has sex with men. A dichotomous variable was created to designate this knowledge.

## *Outcomes*

Three different outcomes were evaluated: disclosure of same-sex behavior to a health care provider, disclosure of same-sex behavior to female sex partners, and consistent condom use.

### Disclosure to health care provider

In the first manuscript paper, participants reported whether they had told their main health care provider that they have sex with men. Specifically, participants answered the question: Have you told your main health care provider that you have sex with men? Response options were “yes” or “no,” and participants were also able to refuse to answer.

### Disclosure to female sex partners

To assess disclosure to female sex partners, during the network inventory portion of the survey, participants were asked to identify who in their social network knows they have sex with men. Response options were “yes” or “no,” and participants were also able to refuse to answer.

### Consistent condom use

Also during the network inventory portion, participants were asked to describe their condom use with each sexual partner. Condom use was measured as a 4-point ordinal variable, ranging from never use condoms to always use condoms. This variable was dichotomized as either consistent condom use (i.e., always use condoms) or not (all other responses). Participants could also refuse to answer.

## *Analysis strategy*

### Missing data

There were minimal amounts of missing data. There were no missing data for the outcomes, MSM and FSP substance use, all MSM sociodemographic variables (i.e., age, education, income, employment, religion, incarceration, have a sexually transmitted infection in the past 3 months, HIV status, sexual identity, health insurance, number of doctor visits, location used for medical care), AUDIT-C, MSM-based discrimination scale, medical distrust scale, depressive symptoms scale, internalized homophobia scale, sexual history, and social network composites.

Among the other FSP characteristics, there were missing data for the variable outside partner. Among the 108 female sex partners, the response was missing for 3 of them. No changes to these data were made. No other FSP characteristics or MSMW-FSP relationship characteristics were missing.

## Manuscript 2 analysis

### ***Descriptive analysis***

All data analyses were conducted using Stata/IC 12.1 Statistical Software (StataCorp, 2012). The frequencies and percentages for the sociodemographics categorical variables (education, income, employment, health insurance, location of medical care, depressive symptoms, recent STI, HIV status, recent incarceration, sexual identity, risky drinking, substance use, high MSM-based discrimination, high medical distrust, sex with women, unprotected anal intercourse, HIV status of most recent male partner, support to network, met network in support group, conflict with network, entire network knows participant is MSM) and the means and standard deviations of continuous variables (age, number of visits to health care provider, number of male sex partners,

network size, size of enacted social support network, frequency socializes, trust) were presented.

### ***Bivariate and multivariate models***

Bivariate and multivariate logistic regression models utilizing generalized estimating equations (GEE) were used to assess the association between explanatory variables and the outcome (i.e., disclosure to health care provider). GEE is used to account for within-network correlation and clustering. Both primary participants and secondary participants were included in the analyses. Secondary participants (n = 39, 17.3% of sample) are from the social networks for primary participants and GEE is used to account for the within-network clustering of multiple secondary participants from the same primary participants. QIC (quasi-likelihood under the independence model criterion) was used to select the best working correlation structure.

Five separate models were examined. Variables that had significant bivariate associations ( $p < 0.20$ ) were included in a backwards selection multivariate model. The interactions between HIV status and risky drinking, sexual identity, socialization frequency, and disclosure to network members were then tested in the second running of the model.

### **Manuscript 3 analysis**

#### ***Descriptive analysis***

All data analyses were conducted using Stata/IC 12.1 Statistical Software (StataCorp, 2012). The frequencies and percentages for the sociodemographics categorical variables (FSP current unemployment, FSP substance use, FSP has outside partner, FSP STI history, FSP HIV status, race concordance, drug use with FSP,

seroconcordant, length known, socialization frequency, cohabitation, social support, partner type, trust, conflictual relationship, quality of communication, financial dependence, MSMW substance use, MSMW high internalized homophobia, MSMW exchange sex, MSMW HIV status, disclosure) and the means and standard deviations of continuous variables (FSP age, age difference, MSMW age) were presented.

### ***Bivariate and multivariate models***

Bivariate and multivariate logistic regression models utilizing generalized estimating equations (GEE) were used to assess the association between explanatory variables and the outcomes. GEE is used to account for within-network correlation and clustering. There are some cases that a participant identifies more than one female partners. Because of the clustering of female sex partners within each MSMW, the data are non-independent and GEE accounts for this correlation. QIC (quasi-likelihood under the independence model criterion) was used to select the best working correlation structure.

Six separate models were examined. Variables that had significant bivariate associations ( $p < 0.20$ ) with disclosure were then included in a backwards selection multivariate model.

Then, variables that had significant bivariate associations ( $p < 0.20$ ) with consistent condom use were included a backwards selection multivariate model, while controlling for MSMW, relationship, and FSP characteristics that were associated with disclosure. The interactions between MSMW HIV serostatus and seroconcordance, socialization frequency, financial support, and MSMW crack use were then tested in the second running of the model predicting condom use.

## HUMAN SUBJECTS PROTECTION

This author completed the CITI training on conducting research with human subjects and research and multiple ethics classes. The Johns Hopkins Bloomberg School of Public Health Institutional Review Board approved an amendment to add this author as a student investigator.

TABLE

Table 3.1 Variables used in Manuscript 2 and Manuscript 3

Variable	Originally measured as (# of levels)	Modification (# of levels)
Age	Continuous	N/A
Education	Categorical	N/A
Income	Categorical	N/A
Employment	Categorical	N/A
Religion	Categorical	N/A
Incarceration <sup>1</sup>	Dichotomous	N/A
STI history <sup>1</sup>	Dichotomous	N/A
HIV status	Categorical	M2: negative; positive; unknown M3: positive; negative/unknown
Sexual identity	Categorical	M2: homosexual; bisexual; heterosexual or other M3: heterosexual; non- heterosexual identity
Health insurance	Dichotomous	N/A
Number of doctor visits <sup>1</sup>	Continuous	N/A
Location used for medical care	Categorical	N/A
MSM substance use <sup>1</sup>	Ordinal	Dichotomous
FSP substance use <sup>1</sup>	Dichotomous	N/A
Risky alcohol use	Continuous	Dichotomous
MSM-based discrimination	Continuous	Dichotomous
Medical distrust	Continuous	Dichotomous
Depressive symptoms	Continuous	Dichotomous
Internalized homophobia	Continuous	Dichotomous
Sex with women <sup>1</sup>	Continuous	Dichotomous
Unprotected anal intercourse <sup>1</sup>	N/A	Dichotomous
HIV status of most recent male sexual partner <sup>1</sup>	Categorical	N/A
Number of male sex partners <sup>1</sup>	Continuous	N/A
Exchange sex	Dichotomous	Dichotomous
Network size <sup>1, 2</sup>	Continuous	N/A
Size of enacted social support network <sup>1, 2</sup>	Continuous	N/A
Mean frequency socializes <sup>1, 2</sup>	Continuous	N/A
Trust <sup>1, 2</sup>	Continuous	N/A
Gives support to at least 1 network member <sup>1, 2</sup>	Continuous	Dichotomous

Met at least 1 network member in support group <sup>1, 2</sup>	Continuous	Dichotomous
Conflict with at least 1 network member <sup>1, 2</sup>	Continuous	Dichotomous
Entire network knows participant is MSM <sup>1, 2</sup>	N/A	Dichotomous
FSP age	Continuous	N/A
FSP unemployment	Dichotomous	N/A
FSP substance use <sup>1</sup>	Dichotomous	N/A
FSP outside partner	Dichotomous	N/A
FSP lifetime STI history	Dichotomous	N/A
FSP HIV status	Dichotomous	N/A
Age difference	N/A	Continuous
Race concordance	N/A	Dichotomous
Gotten high with FSP	Dichotomous	N/A
Seroconcordant	N/A	Dichotomous
Length known	Continuous	Dichotomous
Socialization frequency	Ordinal (5)	Ordinal (3)
Cohabitation	Dichotomous	N/A
Emotional support	Dichotomous	N/A
Material support	Dichotomous	N/A
Financial support	Dichotomous	N/A
Partner type	Categorical	N/A
Trust	Ordinal (10)	Dichotomous
Conflictual relationship	Dichotomous	N/A
Communication quality	Ordinal (4)	Dichotomous
Financial dependence	Ordinal (5)	Dichotomous
Disclosure to HCP	Dichotomous	N/A
Disclosure to FSPs	Dichotomous	N/A
Condom use	Ordinal (4)	Dichotomous

*Note.* N/A = Not applicable. <sup>1</sup> In the past 3 months. <sup>2</sup> This variable is a composite variable. It was originally created by the Lighthouse data manager. M2 = Manuscript 2. M3 = Manuscript 3. If M2 and M3 are not present then there was no difference between the two manuscripts.



## REFERENCES

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## **CHAPTER FOUR: MANUSCRIPT 2**

Comparison of African American Men who have Sex with Men  
Disclosers and Non-disclosers of Same-sex Behavior to  
Health Care Providers: Individual and Social Network Characteristics

## ABSTRACT

Disclosure of same-sex behavior by men who have sex with men (MSM) has been argued to be an important aspect of HIV prevention. However, there are racial disparities as Black MSM are less likely to disclose compared to White MSM. This study identifies individual and social network characteristics of Black MSM (n=226) that are associated with disclosure that may be leveraged to increase disclosure. Over two-thirds (68.1%) of the sample had told their main health care provider that they have sex with men. Men who did not disclose were more likely to identify as bisexual and engage in risky drinking. Positive serostatus, socialization with social network members, and having a social network where all members knew the participant was a man who had sex with men are positively associated with disclosure. These associations did not significantly differ between those who are HIV positive and HIV negative or HIV-status unsure. Interventions that target the health care provider and the social environment are needed to increase the likelihood men disclose same-sex behavior to their HCPs.

## INTRODUCTION

Learning one's infection status via HIV testing can be an important HIV prevention approach. Awareness of HIV positive status is associated with lower risks of transmission through decreases in behaviors that transmit HIV in some populations (1). Additionally, once individuals know their serostatus they can also begin therapies to reduce viral load and hence risk of transmission.

Despite these potential positive public health outcomes associated with HIV testing, a 21-city behavioral surveillance study reported that 44% of men who have sex with men (MSM) are unaware of their positive serostatus (2). The study found that the highest proportion of MSM who were unaware by ethnic group was black MSM (59%).

Baltimore, compared to the national average, had an even higher rate (77%) of black MSM who were unaware of their HIV infection (3).

One possible method to increase HIV testing, among MSM, is to encourage disclosure of male-male sex behaviors to health care providers (HCPs). As MSM are at high risk for HIV, providers may encourage more frequent testing if they were aware their male patients had sex with men and, therefore, disclosure has been argued as an important aspect of health care. By disclosing same-sex sex behaviors, health care providers can offer comprehensive evaluations and recommend appropriate disease screenings to improve health (4). Disclosure has been found to be positively associated with MSM testing for HIV, receiving recommendations for sexually transmitted infection (STI) testing, and being offered the Hepatitis A or Hepatitis B vaccine (4, 5).

However, there are racial disparities in the rates of disclosure to HCPs. Black MSM were less likely to disclose compared to white MSM (4, 6, 7). In one study, not disclosing to HCPs was a risk factor for HIV infection among black MSM in Jackson, Mississippi (8).

In addition to racial differences, previous research has focused mostly on other individual-level characteristics, including sociodemographics, sexual history, and drug-using behaviors, and disclosure by gay- and bisexual-identified men disclosing their respective sexual orientations to their HCPs. Depression and substance abuse, risk factors for HIV, have not been studied in the context of disclosure. The influence of the social environment, in particular the role of social networks of MSM, has been examined less in this area.

Social networks can convey societal norms or provide support, buffering individuals from stressors (9). These functions may be associated with individuals' disclosure to health care providers. Some research on social networks has found that individuals who reported more relatives and people they worked with or go to school with knew their sexual orientation were more likely to have disclosed their sexual orientation to their HCP (10). However, disclosure of sexual orientation, such as gay or bisexual, is not the same as disclosure of sex-specific sex behaviors. Therefore, a gap exists in understanding the factors associated with same-sex sex behavior disclosure.

The purpose of this study was to identify individual and social network characteristics that are associated with disclosure of same-sex behavior to health care providers by black MSM. Findings from the study can be used to address possible factors to promote disclosure of same-sex sex behaviors to HCPs by black MSM.

## METHODS

Data for the current study were from the baseline survey from Unity iN Diversity (UND), a pilot HIV risk-reduction intervention for African American MSM conducted in Baltimore, MD.

There were two types of participants: primary and secondary. Primary participants were recruited through venue-based outreach, print advertisement in newspapers, referrals from agencies, and websites. In order to participate, participants needed to be 18 years or older, identify as African American or black, have at least 2 sex partners in the past 90 days (at least one of whom was male), have unprotected anal sex with a male partner in the past 90 days, and be willing to take an HIV test. Primary participants were asked to recruit both male and female individuals from their social networks (i.e.,

secondary participants). More details for the study and recruitment are published elsewhere (11). After completing informed consent procedures, participants were surveyed about their demographics, sexual risk, and drug risk using audio computer-assisted self-interview technology. Participants also described their social networks using a modified inventory based on the Arizona Social Support Inventory (12). Participants named individuals who could provide social support, they socialized with, and they had sex with in the past 3 months. After all the names were generated, participants were asked to describe their network members, including how they met, the level of trust, how often they interacted, each person's relationship to the participant, and whether each person knew the participant had sex with men.

For this current study, all participants who were male, identified as African American or black, and had sex with at least one other man in the past 90 days were included (187 primary participants and 39 secondary participants).

### *Measures*

#### Disclosure to health care provider

Participants reported (yes or no) whether they had told their main health care provider that they have sex with men. Specifically, participants answered the question: Have you told your main health care provider that you have sex with men?

#### MSM discrimination scale

This 11-item scale measured the frequency of experiencing MSM-based discrimination while growing up and as an adult. Individuals reported on a 4-point scale (never, once or twice, a few times, many times) how often various incidences, such as being made fun of, or harassed by police, occurred. The scale has good internal

consistency (Cronbach's  $\alpha = .80$ ). To make the variable more meaningful, it was dichotomized such that those who had experienced discrimination at least "a few times" on 6 out of the 11 items were classified as high discrimination.

#### Medical distrust scale

Participants were asked how much they can trust doctors and health care workers. Participants rated 9 statements on a 5-point scale from strongly agree to strongly disagree (Cronbach's  $\alpha = .83$ ). To make the variable more meaningful, it was dichotomized to represent high medical distrust and low medical distrust. Those with high medical distrust agreed or strongly agreed on all the items.

#### Substance use

Participants reported the frequency they used various substances, such as cocaine, crack, heroin, and marijuana, over the past 3 months. Results were dichotomized to represent either use in the past 3 months or no use in the past 3 months.

#### Alcohol consumption

The AUDIT-C (13) was used to assess whether participants met criteria for alcohol use disorders. The AUDIT-C consists of 3-items about alcohol consumption and has been validated as a screening test. Using a cutoff score of 4 suggests risky drinking and reflects the best combined sensitivity and specificity compared to other cutoff scores (14).

#### Depressive symptoms

The Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure depressive symptoms. A score of 16 suggests a clinically significant level of depressive symptoms (15).



### Sex history

After identifying their most recent male sex partner, participants answered questions about that partner and the context of the last time they had anal sex. Participants also reported the number of sex partners by sex partner gender in the past 3 months.

### HIV status

Participants were asked to report the test results from their last HIV test (i.e., positive, negative, indeterminate). Participants who had an indeterminate test result or had never been tested for HIV were classified as unknown. Although the study protocol included HIV antibody testing, self-reported HIV status was used as it better reflects the individual's perceived status.

### Sociodemographic characteristics

Participants reported their age, education, income, employment, religion, incarceration in the past 3 months, having a STI in the past 3 months, sexual identity, health insurance status, the number of doctor visits in the past year, and location used for medical care.

### Social network characteristics

Using data from the modified Arizona Social Support Inventory, composite variables were created to describe the social network. This study examined the following network characteristics: number of network members identified, number who provided social support, number to whom the participant provided support, number who were met in a support group, number with whom had a conflictual relationship, and number who

knew the participant had sex with men, frequency of socialization, and mean trust of network members.

### *Analysis plan*

Bivariate associations were examined using logistic regression models with generalized estimating equations (GEE) to account for correlated data (16). GEE accounts for the interdependence among the secondary participants and that primary participants could have recruited multiple network members (i.e., secondary participants). All variables that were statistically significant in the bivariate analysis ( $p < .20$ ) were entered into backwards selection (criteria to remove  $p < .10$ ) logistic regression models with GEE. Having a doctor one usually goes to for medical care and frequency of seeing HCPs in the last year were controlled for in the multivariate model. Quasilikelihood under the independence model criterion (QIC) was used to select the best working correlation structure (17). Analyses were conducted using Stata Statistical software release 12 (StataCorp, College Station, TX).

HIV positive men may have a different relationship with HCPs than HIV negative men; therefore, due to this hypothesized difference, additional analyses were conducted for HIV positive MSM.

## RESULTS

### *Sample characteristics*

A sample of 226 African American MSM was surveyed. The sample characteristics of the participants are summarized in Table 4.1. On average, they were 37.9 years old. More than three-quarters (78.8%) had at least a high school education. Nearly half the sample had an annual income of less than \$10,000. About one-quarter of

the sample was employed either full-time or part-time. About forty percent (41.6%) were HIV positive and 12.4% did not know their HIV status. Few (6.6%) had a recent STI other than HIV. Nearly half the sample reported using marijuana, the most commonly used drug, in the past 3 months. The next most commonly used drug was crack; 36.3% reported using it during the past 3 months.

The average social network consisted of 8.3 individuals, although social network sizes ranged from 1 to 35 (see Table 4.1). Slightly less than three-quarters (73.9%) of participants had told all of their social network members, excluding male sex partners in the social network, that they have sex with men.

Two-thirds (68.6%) had some type of health insurance or medical coverage. When sick, the two most common places to seek medical care were a medical doctor's office (37.6%) or the emergency room (35.4%).

Among the 226 participants, two-thirds (68.1%) of the sample had told their main health care provider that they have sex with men. Of the HIV positive MSM (n=94), less than 10% (n = 9, 9.57%) had not disclosed to their HCP. Of the HIV negative or unsure MSM (n=132), slightly more than half (n=69, 52.3%) disclosed to their HCP.

#### *Significant bivariate associations*

##### Individual characteristic

For the entire sample of MSM, MSM who had some college education, identified as heterosexual or bisexual, were risky drinkers, and had sex with women were likely to tell their health care provider they have sex with men (see Table 4.1). However, men who were HIV positive and reported experiencing high MSM discrimination were more likely to have disclosed to their health care provider. Over ninety percent (90.4%) of HIV

positive MSM had disclosed to their HCP while 52.9% of HIV negative and 50.0% of HIV unsure MSM had disclosed.

For HIV positive MSM, MSM who had some college or higher education, compared to those who did not graduate from high school, and reported experienced high MSM discrimination were more likely to tell their HCP they have sex with men (see Table A.1). HIV positive MSM who had a recent STI, identified as nongay, or had sex with women were less likely to disclose to their HCP.

For HIV negative or unsure MSM, those who were older, identified as non-gay (bisexual, heterosexual, or other), compared to gay, engaged in risky drinking, used amyl nitrates, or had sex with women were less likely to disclose (see Table A.2).

#### Network characteristics

Nearly all social network characteristics were significantly positively associated with disclosure (see Table 4.1). Network size and trust were not associated with disclosure.

For HIV positive MSM, the only social network variable that was associated with disclosure to HCPs was whether the entire network knew the participant had sex with men (see Table A.1). If the entire network was aware the participant had sex with men, they were more likely to disclose to their HCP.

For HIV negative or unsure MSM, nearly all social network characteristics were positively associated with disclosure (see Table A.2). No association was found between disclosure and conflictual relationship.

#### *Multivariate model*

For the group containing all MSM, the mean variance inflation factors (VIF) for the multivariate model was 3.09, ranging from 1.29 to 7.93. All the VIF values are low, suggesting a lack of multicollinearity among the variables. Three individual-level characteristics were significantly associated with disclosure in the multivariate model (see Table 4.1). Men who identified as bisexual and were a heavy drinker were less likely to disclose, while men who were HIV positive, compared to those who are HIV negative, were more likely to disclose. Among the network-level variables, a social network in which all network members knew the participant had sex with men and greater frequency of socializing with social network members were significantly positively associated with participants disclosing to HCPs.

For HIV positive MSM, in the multivariate model, the mean VIF was 1.97, ranging from 1.16 to 3.12, suggesting a lack of multicollinearity. One individual-level characteristic and one social-network characteristic were significantly associated with disclosure in the multivariate model (see Table A.1). Men who identified as bisexual, as compared to those who identified as gay, were less likely to disclose. Similarly to the entire MSM sample, men whose entire social network knew the participant had sex with men were significantly more likely to disclose to HCPs.

For HIV negative or HIV-status unsure MSM, those who drink heavily were less likely to disclose to HCPs (see Table A.2). Disclosure was positively associated with MSM whose entire network knew he had sex with men, socialized with their network members more frequently, and network size. Disclosure was negatively associated with heavy drinking. The mean VIF was 3.42, ranging from 1.76 to 6.47, suggesting a lack of multicollinearity.

Based on the results of the stratified analyses, interactions between HIV status and the significant variables above were conducted to statistically test for differences across HIV status. The associations between the four variables and disclosure did not significantly differ between those who are HIV positive and HIV negative or HIV-status unsure.

## DISCUSSION

The current study focuses on individual and social network characteristics associated with disclosing same-sex sex behaviors to health care providers by black men who have sex with men. The significant findings of the study are bisexual identity and risky drinking are negatively associated with disclosure while positive serostatus, socialization with social network members, and having a social network where all members knew the participant was a man who had sex with men is positively associated with disclosure.

In this sample, 68.1% of participants had told their main health care provider they have sex with men. This is a higher percentage than reported in other studies. Other researchers have reported disclosure rates at about 40% among African American men (4, 7). Part of the discrepancy in the percentages across the studies may be due to the phrasing of the disclosure variable. In the other studies, researchers measured disclosure of sexual orientation or disclosure of attraction to or having sex with men. In this study, disclosure was measured as having sex with men. It is important not to conflate sexual identity and sexual behavior. Sexual orientation does not necessarily predict sexual behavior.

Only one individual-level variable was associated with higher odds of disclosure of same-sex sex behavior to health care providers: HIV positive status. A greater proportion of the sample who did not know their HIV status had not disclosed. This association may exist because for some individuals disclosing being infected with HIV coincides with describing how HIV was contracted (18). In the process of disclosing HIV serostatus to health care providers for medical care, MSM may have also told their health care providers they were infected through having sex with men. Future research should explore this hypothesis as most research in this area has not focused on disclosure to HCPs.

Two individual-level variables, identifying as bisexual and being a risky drinker, were negatively associated with disclosure. The association between sexual identity and disclosure is similar to other findings (7). However, it is not clear why higher alcohol consumption was associated with lower odds of disclosure. One possible explanation is these men are engaging in a behavior that goes against general medical advice to moderate alcohol consumption and may expect doubly negative responses from their HCPs when disclosing two stigmatizing behaviors. Therefore, they may seek to keep this information private. Alternatively, men who meet criteria for alcohol use disorders may be more focused on alcohol and less focused on other aspects of their lives, including health care. Regardless of the reason, alcohol is a risk factor for HIV (19) and strongly correlated with mortality among HIV-infected individuals (20-22). Therefore, this research further supports the need to address alcohol consumption as part of HIV risk reduction strategies.

From previous research, age, ever tested for HIV, having more male sex partners, lower income, lower education, and having female sex partners were other individual-level factors associated with disclosure (4, 7, 23). These characteristics were not significantly associated in the multivariate model.

Among the characteristics of the participants' social networks, many had positive bivariate associations with disclosure. In the multivariate model, having a network in which everyone knows the participant has sex with men and greater socialization frequency are associated with higher odds of disclosure to health care providers. Taken together, these findings could serve as an indicator that the participant was more comfortable disclosing his personal information. However, this measure could also represent a change in network composition over time or a selection of network members who are presumed to be supportive. Network members who reacted poorly to the disclosure may have been removed from the network and thus, the current network may only reflect those who are comfortable with the participant being MSM. Only 17 (7.52%) men reported that there were social network members who did not treat him well because he has sex with men. Given the low rates of poor treatment, social network members may represent supportive environments that encourage disclosure. Therefore, these positive experiences may have encouraged the participant to disclose to his HCP.

Future research should continue to study the disclosure of same-sex behavior to a health care provider among black MSM. There may be reasons specific for disclosure to health care providers, such as information and social support seeking, other important barriers, and reasons for the differences between HIV negative and HIV positive MSM to understand. For example, HIV negative men may not have a regular doctor. The men



may also perceive dangers of disclosure such as information on sexual partner gender reaching others in their community.

Additionally, further investigation of social network characteristics is important. The functions that social networks provide in this context may be different than others, including social network member norms around their own disclosure of private information. In on-going research, the author of this study is collecting information to better understand the reasons for disclosure to HCPs and the role of social networks in promoting this disclosure.

There are several limitations of this study. This study relied on self-reported information. In order to minimize this bias, interviewers were carefully trained to build rapport with clients and participants answered questions about risk behaviors in a private room by themselves using audio computer-assisted self-interview.

Because of the sampling procedure, the findings in this study may not necessarily be generalizable to all black MSM in Baltimore. However, the study is one of the first studies focused on black MSM and disclosure of same-sex behaviors to their health care provider and was able to identify important individual and social network characteristics. Given the positive association between disclosure and HIV prevention and much lower rates of disclosure among African American MSM, this study identified important factors to consider for intervention.

In conclusion, interventions that could facilitate disclosure include training all health care providers to be sensitive to the health needs, concerns, and various sexual identities of men who have sex with men, and establishing MSM-friendly clinics. In particular, providers who are not judgmental of bisexual men and heavy alcohol users

may be needed. Additionally, changing the social environment such that disclosure of same-sex behavior would not be met with judgment or negative reactions from social network members could increase the likelihood men disclose same-sex behavior to their HCPs. Achieving this goal would require structural interventions to change the currently stigmatizing environment and remove the multitude of discriminatory practices against MSM.

## TABLES

Table 4.1 Sample and Social Network Characteristics, and Bivariate and Multivariate Associations with Disclosure to Health Care Providers by African American Men who have Sex with Men (MSM) in the Unity iN Diversity Study

	n (%)	Not disclose (n=72)	Disclose (n=154)	OR (95% CI)	AOR (95% CI) <sup>3</sup>
Mean age (SD)	37.9 (10.6)	37.8 (11.5)	37.9 (10.2)	1.00 (0.97, 1.03)	
Education					
Less than HS	48 (21.2)	20 (27.8)	28 (18.2)	Referent	
Diploma/GED	82 (36.3)	27 (37.5)	55 (35.7)	1.46 (0.70, 3.04)	
Some college or higher	96 (42.4)	25 (34.7)	71 (46.1)	2.03 (0.97, 4.22)†	
Income					
<\$10,000	119 (52.7)	40 (55.6)	79 (51.3)	Referent	
\$10,000-\$29,999	75 (33.2)	24 (33.3)	51 (33.1)	1.08 (0.58, 2.00)	
\$30,000+	32 (14.2)	8 (11.1)	24 (15.6)	1.52 (0.62, 3.70)	
Employment					
Full-time	35 (15.5)	11 (15.3)	24 (15.6)	Referent	
Part-time	27 (12.0)	15 (20.8)	12 (7.8)	0.37 (0.14, 0.99)*	
Not working	98 (43.4)	32 (44.4)	66 (42.9)	0.94 (0.41, 2.16)	
On disability	66 (29.2)	14 (19.4)	52 (33.8)	1.70 (0.67, 4.33)	
Has health insurance	155 (68.6)	45 (62.5)	110 (71.4)	1.50 (0.81, 2.79)	
Mean visits to health care providers (SD) <sup>1</sup>	4.66 (5.28)	3.35 (5.18)	5.28 (5.23)	1.10 (0.98, 1.25)	
Medical care location					
Medical doctor's office	85 (37.6)	27 (3.75)	58 (37.7)	Referent	
Emergency room	80 (35.4)	29 (40.3)	51 (33.1)	0.82 (0.43, 1.56)	
Community/free clinic	49 (21.7)	11 (15.3)	38 (24.7)	1.61 (0.70, 3.70)	
Other	7 (3.1)	3 (4.2)	2 (1.3)	0.31 (0.05, 1.95)	
Nowhere	5 (2.2)	2 (2.8)	5 (3.3)	1.16 (0.21, 6.41)	

Depressive symptoms (CES-D > 16)	82 (36.3)	28 (38.9)	54 (35.1)	0.85 (0.47, 1.54)	
Recent STI <sup>2</sup>	15 (6.6)	4 (5.6)	11 (7.1)	1.31 (0.39, 4.33)	
HIV status					
Negative	104 (46.1)	49 (68.1)	55 (35.7)	Referent	Referent
Positive	94 (44.3)	9 (12.5)	85 (55.2)	8.41 (3.78, 18.73) <sup>***</sup>	5.66 (2.09, 15.33) <sup>**</sup>
Unknown	28 (12.4)	14 (19.4)	14 (9.1)	0.89 (0.38, 2.10)	0.57 (0.21, 2.52)
Recent incarceration <sup>2</sup>	34 (15.0)	10 (18.5)	24 (23.1)	1.14 (0.50, 2.62)	
Sexual identity					
Homosexual, gay	132 (58.4)	28 (38.9)	104 (67.5)	Referent	Referent
Bisexual	73 (32.3)	35 (48.6)	38 (24.7)	0.29 (0.15, 0.55) <sup>***</sup>	0.36 (0.16, 0.62) <sup>*</sup>
Heterosexual or other	21 (9.3)	9 (12.5)	12 (7.8)	0.36 (0.14, 0.90) <sup>*</sup>	0.58 (0.19, 1.77)
Risky drinking (AUDIT-C > 4) <sup>2</sup>	136 (60.2)	51 (70.8)	85 (55.2)	0.51 (0.27, 0.96) <sup>*</sup>	0.33 (0.14, 0.76) <sup>**</sup>
Marijuana use <sup>2</sup>	115 (50.9)	36 (50.0)	79 (51.3)	1.05 (0.60, 1.85)	
Amyl Nitrate use <sup>2</sup>	21 (9.3)	3 (4.2)	18 (11.7)	3.04 (0.85, 10.95) <sup>†</sup>	
Heroin use <sup>2</sup>	42 (18.6)	18 (25.0)	24 (15.6)	0.55 (0.28, 1.10) <sup>†</sup>	
Crack use <sup>2</sup>	82 (36.3)	43 (59.7)	101 (65.6)	0.78 (0.44, 1.37)	
High MSM discrimination	143 (63.3)	39 (54.2)	104 (67.5)	1.76 (0.99, 3.12) <sup>†</sup>	
High medical distrust	87 (38.5)	30 (41.7)	57 (37.0)	0.82 (0.46, 1.46)	
Sex with women <sup>2</sup>	73 (32.3)	38 (52.8)	35 (22.7)	0.26 (0.14, 0.48) <sup>***</sup>	
Unprotected anal intercourse <sup>2</sup>	141 (62.4)	43 (30.5)	98 (69.5)	1.18 (0.64, 2.18)	
HIV status of most recent male sex partner					
HIV negative	96 (42.5)	12 (16.7)	60 (39.0)	Referent	
HIV positive	72 (31.9)	38 (52.8)	58 (37.7)	3.28 (1.55, 6.94) <sup>**</sup>	
Unsure of status	58 (25.7)	22 (30.6)	36 (23.4)	1.07 (0.54, 2.13)	
Mean number of male sex partners (SD) <sup>2</sup>	4.6 (4.9)	2.44 (2.04)	3.61 (1.93)	0.99 (0.93, 1.05)	
Mean network size (SD)	8.3 (4.2)	7.85 (3.46)	8.57 (4.54)	1.04 (0.98, 1.12)	
Mean size of enacted soc. supp. netw. (SD)	4.4 (2.5)	4.04 (1.89)	4.56 (2.76)	1.09 (0.98, 1.21) <sup>†</sup>	
Mean frequency socializes (SD)	3.7 (0.7)	2.46 (0.65)	2.24 (0.71)	1.56 (1.01, 2.42) <sup>*</sup>	1.87 (1.09, 3.23) <sup>*</sup>
Mean trust (SD)	7.2 (1.9)	6.96 (1.92)	7.27 (1.88)	1.09 (0.94, 1.26)	

Gives support to at least 1 network member	81 (35.8)	20 (27.8)	61 (39.6)	1.71 (0.93, 3.11) <sup>†</sup>	
Met at least 1 netw. member in supp. group	25 (11.1)	2 (2.8)	23 (14.9)	6.15 (1.38, 27.40) <sup>*</sup>	
Conflict with at least 1 network member	140 (62.0)	46 (63.9)	94 (61.0)	0.89 (0.49, 1.61)	
Entire network knows participant is MSM	167 (73.9)	36 (50.0)	131 (85.1)	5.70 (3.01, 10.79) <sup>***</sup>	4.79 (2.01, 11.42) <sup>***</sup>

<sup>1</sup> In the past year. <sup>2</sup> In the past 3 months. <sup>3</sup> Controlling for having a usual doctor or other health care provider and frequency of visits to health care providers in the past 12 months. <sup>‡</sup>  $p < .20$ . <sup>†</sup>  $p < .10$ . <sup>\*</sup>  $p < .05$ . <sup>\*\*</sup>  $p < .01$ . <sup>\*\*\*</sup>  $p < .001$ .

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## **CHAPTER FIVE: MANUSCRIPT 3**

Condom Use and Female Sex Partner Dyads of  
African American Men who have Sex with Men and Women

## ABSTRACT

Little is known about the disclosure of same-sex behaviors to female sex partners by African American men who have sex with men and women. The relationship between disclosure and condom use with female sex partners is also unclear. The aims of this research were to quantitatively model how partner-, relationship-, and individual-level characteristics influence disclosure and examine the association between disclosure and condom use. Disclosure occurred in slightly less than one-quarter (23.2%) of relationships. Factors associated with disclosure are age difference, level of trust, and the male partner's HIV status. Disclosure of same-sex behavior is significantly and positively associated with consistent condom use. This study suggests that disclosure of same-sex behavior may be an important aspect for HIV prevention.

## INTRODUCTION

There continues to be high rates of HIV infection among men who have sex with men (MSM). Nationally, nearly two-thirds (63%) of all new HIV infections were due to male-to-male sex (1). HIV incidence among MSM has continued to rise; the number of new infections increased by 12% among MSM from 2008 to 2010 (1).

HIV is not evenly distributed among MSM of different racial and ethnic groups. Blacks are disproportionately and most severely affected by HIV. The rate of new HIV infections among Blacks was almost eight times higher than that compared to Whites (1). Among Blacks, Black men accounted for 70% of new infections and three-quarters (72%) of new infections among Black men were attributed to MSM (1). Overall across all racial and ethnic groups and transmission categories and both sexes, Black MSM accounted for the second highest number of new HIV infections in 2010 (1).

In addition to the racial disparities in the rate of new HIV infection, there are significant disparities in HIV health care and outcomes by race. Blacks are less likely to be on antiretroviral therapy and be virally suppressed (2). The progression to AIDS is also more likely among Black MSM compared to White MSM (3). Furthermore, the three-year survival after AIDS diagnosis was lower for Black MSM than White or Hispanic MSM (3).

To understand these disparities in HIV infection among Black and White MSM several researchers have conducted literature reviews or meta-analyses to test various hypotheses that may explain the disparities (4-6). They conclude that behavioral risk only partially explains the racial disparities and call for a focus on structural and social environmental factors.

Among Black MSM much attention has been given to men who have sex with both men and women (MSMW). These men have been framed as a “bridging population;” suggesting an explanation of the high rates of HIV among Black women is due to behaviorally bisexual men serving as a link, or bridge, between a high HIV prevalence population (MSM) to a lower HIV prevalence population (women) (7-10). Concerns have been raised about MSMW who do not disclose their same-sex behaviors to their female partners (i.e., non-disclosers) and the risk it may be posing to Black women. Sometimes the term “down low” has been used to refer to these men: men who do not identify as homosexual or bisexual, have sex with men, and lead an outwardly appearing heterosexual life while maintaining a “secret” or “private” life of engaging in same-sex behavior without the awareness of their female partners. Others have conceptualized down low as a sexual identity. Concerns have been brought up around the

use of this label. One concern is the disproportionate attention “down low” Black men have received. Many people hide their sexual relationship with same-sex partners, yet “down low” men’s experiences have been sensationalized. Perhaps this reflects the biases against same-sex relationships and scapegoating of these men for the high rates of HIV among Black women. This term also limits our understanding of the diversity and complexity of sexuality. Sexual behavior is being conflated with sexual identity.

Studies have described various aspects of this subpopulation’s HIV risk by comparing MSMW to men who have sex with men only (MSMO). MSMW were less likely to be HIV positive, have an unrecognized HIV infection, and have unprotected receptive anal sex (11-15). There were no differences in the rates of unprotected insertive anal sex or number of male sex partners between MSMO and MSMW (15, 16). MSMW were more likely than MSMO to have exchanged sex for money, food, or drugs (11). MSMW were less likely to use amyl nitrates, but more likely to use heroin, relative to MSMO (12). MSMW also had more dense sexual networks compared to MSMO (14).

Few studies have been conducted focused on non-disclosing MSMW exclusively. In one multiethnic study of MSMW who had not disclosed their same-sex behavior to their female sexual partners, these men reported more male partners than female partners and more insertive oral and anal sex with men than receptive oral or anal sex with men (17). Other studies have compared “down low identified” MSM to “non-down low” identified MSM. In a study of all Black men and in one ethnically diverse study (33% of the sample was Black), after controlling for race, men who identified as on the down low were more likely to have unprotected vaginal intercourse and reported more male sex partners compared to non-DL identified men (18); yet, other researchers found

comparable rates of unprotected sex with men and number of male sex partners between the two groups when the study was conducted with an all-Black sample (19). Others have found lower rates of unprotected anal intercourse with male partners among nondisclosers compared to disclosers or no association between rates of unprotected anal intercourse with male partners and disclosure (20, 21).

Researchers have also explored the association between nondisclosure and unprotected anal and vaginal intercourse with female partner. Men who did not disclose were more likely to have unprotected vaginal or anal intercourse with female partners (12, 18, 21, 22). In a sample of all Black men, men who disclosed, compared to those who did not, were less likely to be engaged in unprotected vaginal or anal intercourse with female partners (12). However, others have found no association between rates of safer sex and disclosure (23, 24). In these two studies, a small percentage of the sample was Black (6% and 13.1%, respectively). Yet it is not clear why there have been contradictory findings on the relationship between disclosure and condom use with female partners.

In addition to these HIV-related behavioral correlates, researchers have studied the rates of disclosure by Black men who have sex with men and women (BMSMW) and compared them to other racial groups, primarily White MSMW. Studies that report disclosure by BMSMW have generally reported either about 20% (23, 25, 26) or 70% (12, 21, 24) of the participants disclose. There was great variability in the methods used across the studies to identify samples of men and female sex partners. Compared to White MSMW, Black MSMW generally disclose less frequently (21, 24).

To explain these rates, researchers have identified barriers to disclosure. These include social and cultural factors, stigma, anticipated negative emotional or physical

violence, not wanting to hurt partners, and a fear of rejection or being labeled as gay (25, 27, 28). Additionally, several individual-level, female sex partner (FSP), and relationship characteristics have also been found to be associated, including internalized homonegativity, sexual identity of the men and their female partners, substance use, age, HIV status, education, being in an intimate and committed relationship, trust, length of relationship, history with the partner, longer lasting relationship, and more serious relationship (15, 23-25, 28, 29). Most of the individual-level factors have been studied through quantitative research while female partner and relationship characteristics were usually identified from qualitative studies.

To date, few studies have quantitatively modeled factors from these three important influences together, which would provide a more complete picture of how these different factors influence and are influenced by one another. One study that looked at MSMW and female partner characteristics simultaneously had only focused on the most recent female sex partner and not included relationship characteristics (24). Focusing on most recent partner provides a limited understanding as MSMW may have more than one female partner.

One approach to studying disclosure to female partners in a more nuanced way is to use social networks. This current study uses a social network perspective and is guided by the Social Cognitive Theory (30) and the Dyadic Framework for HIV-Prevention (31). With these perspective and social network data collection methodology, data are collected about and modeled for every female as well as male sex partner, including characteristics of the female sex partner and relationship characteristics and allow for a more precise understanding of the relationship between disclosure and risk behaviors.

There has been one study that used a social network approach by collecting information about whether each woman was disclosed to, but then collapsed the data, creating one summary measure across all the women and not preserving the dyads (21).

Given the limited understanding of the context of disclosure by MSMW to their female partners and inconsistent findings of the disclosure-condom use association, the goals of this study are to 1) describe the characteristics of the relationship and female sex partners who are disclosed to, 2) examine the association between MSMW, relationship, and female sex partner characteristics, and disclosure, and 3) examine the association between disclosure and condom use.

## METHODS

Data for this study come from the baseline survey of a social network intervention to reduce HIV risk among African American MSM in Baltimore, MD. A full description of the study and eligibility criteria has been described elsewhere (32). Briefly, participants were 18 years or older, identified as male and African American or Black, reported having at least two sex partners, one of whom had been a male partner, in the past three months, and reported unprotected anal intercourse with a man in the past three months.

For this study, the sample was limited to African American MSMW (27.4% of the total original sample). Men who reported having at least one female sex partner in their social network were classified as MSMW and included in the data analysis.

At the baseline visit, participants completed two different types of surveys to provide information about themselves (referred to as the “main survey”) and their social network (referred to as the “social network survey”). In the main survey participants



reported on their sociodemographic characteristics, sexual behaviors, substance use, and HIV serostatus. In the social network survey, participants described their social networks using a modified inventory based on the Arizona Social Support Inventory (14). To identify social network members, participants named individuals who could provide social support and with whom they socialized and had sex in the past three months. After all the names were generated, participants were asked to describe each social network member, including age, race, gender, relationship, length known, socialization frequency, level of trust, HIV status, drug use, and whether s/he knew the participant had sex with men. Additionally, for sex partners, participants reported on partner type, condom use, and quality of communication.

### *Measures*

#### Emotional support

Emotional support was measured by, “who[m] did you talk to about things that were personal and private or who did you get advice from?”

#### Material support

Material support was measured using the following question: who pitched in to help you do things that you needed some help with such as running errands, giving you a ride, etc?

#### Financial support

To measure financial support, participants were asked who loaned or gave you some money.

#### Trust

Participants rated how much they trusted each FSP on a 10-point scale ranging from “don’t trust at all” to “trust with my life”. This variable was dichotomized to compare those who had high trust (score of 10) in their partners to those who did not.

#### Length known

Participants reported on how long they have known the FSP to the nearest month. Based on the distribution and to make the variable more interpretable, this variable was dichotomized at a cut point of 10 years. Analyses compared relationships that had lasted at least 10 years to those that were less than 10 years long.

#### Socialization frequency

Participants reported how often they talked to or saw their social network members on a 5-point scale. For interpretation, this variable was collapsed into three categories: frequently (at least once a week or every day), monthly (about once a month or a few times a month), and infrequently (a few times a year or less).

#### Cohabitation

Participants were asked whether they lived with each network member. This is a dichotomous variable.

#### Outside partner

Participants reported whether or not they thought their sex partners had other sex partners outside of their dyad.

#### Conflictual relationship

Social networks members with whom the participant was not on good terms (i.e., disagree with, argue, or fight with) were classified as having a conflictual relationship.

#### Financial dependence

Participants rated how dependent they were on their sex partners for money or a place to live on a 5-point scale from not dependent to very dependent. Because of the data distribution, this variable was dichotomized to identify those who were highly dependent (score of 4 or 5) and those who were not.

#### Seroconcordance

Using self-reported HIV status of the MSMW and the reported HIV status of the FSPs, dyads were classified as either seroconcordant or not. Seroconcordant dyads were those in which a) both partners were HIV seropositive or b) the FSP was HIV seronegative and the MSMW was HIV seronegative or serostatus unknown.

#### Partner type

The following definitions were presented to participants so they could classify their sexual partners into one of three types of partnerships: main, casual, or exchange. A “main” partner is someone you have a relationship with, like a spouse or lover, boyfriend or girlfriend. A “casual” partner is someone that you hook up with from time to time to have sex. An “exchange” partner is someone you have sex with in exchange for food, money, shelter or drugs.

#### Communication

Participants rated the quality of communication with each partner on a 4-point Likert-like scale: poor, fair, good, or excellent. This variable was dichotomized to compare dyads with good or excellent communication to those with poor or fair communication.

#### Age difference

The difference in age between each participant and their female sex partners was calculated by subtracting the age of the female sex partner from the age of the participant.

A positive score represents that the participant was older than his FSP.

#### Race concordance

As the sample of MSMW was all African American, dyads were classified as race concordant if FSPs were reported as African American.

#### Disclosure

Participants were asked to identify who in their social network knows they have sex with men.

#### Condom use

Condom use was measured as a 4-point ordinal variable, ranging from never use condoms to always use condoms. Condom use was dichotomized to determine factors associated with consistent condom use (i.e., always use condoms).

#### Sociodemographic characteristics of female partners

Participants reported on FSPs' race, age, current employment status, drug use (heroin, crack, cocaine, or methamphetamine in the past 3 months, or injected drugs in the past 3 months), HIV status, and lifetime STI. Participants also reported whether they had ever gotten high with each FSP.

#### Sociodemographic characteristics of MSMW

Participants reported their age, highest education level completed, sexual identity, HIV status, whether they exchanged sex for money or drugs in the past 3 months, and drug use (marijuana, ecstasy, cocaine, crack, methamphetamine, or heroin) in the past 3 months.

To measure alcohol dependence, the AUDIT-C scale (33) was used. Participants who

scored a 4 or higher were classified as heavy drinking (34). To measure internalized homonegativity, a modified version of the scale Martin and Dean (1987) created was used. Participants reported their agreement to four statements on a five-point scale (1 = “strongly disagree” to 5 = “strongly agree”). An example statement is “Sometimes I dislike myself for being sexually attracted to men.” All items load on one factor with high internal reliability (Cronbach’s  $\alpha=0.89$ ). Using median split, this variable was dichotomized as having high internalized homonegativity or not.

### *Data Analysis*

Bivariate and multivariate logistic regression models utilizing generalized estimating equations (GEE) were used to assess the association between MSMW, relationship, and female partner characteristics and disclosure and the association between disclosure and condom use. Variables that had significant bivariate associations ( $p < 0.20$ ) were then included in a backwards selection multivariate model. Because of the clustering of female sex partners within each MSMW, the data are non-independent and GEE accounts for this correlation. QIC (quasi-likelihood under the independence model criterion) was used to select the best working correlation structure.

## RESULTS

### *Description of the female sex partners*

In this sample 108 female sex partners were described (see Table 5.1). Nearly all female partners were Black (94.44%). On average, the women were reported to be 38.98 years old (range: 19-65). Over one-third of the female partners were reported to be currently unemployed. Methamphetamine and injection drug use during the past 3 months was low (1.85% and 2.78%, respectively), while one-fifth of women had used

crack. Ten percent of partners were reported to be HIV positive and 17.59% had ever had a sexually transmitted infection.

#### *Description of the dyadic relationships*

From a sample of 62 MSMW, more than half of men had one female sex partner and on average each man had 1.74 female sex partners (SD=1.05; Range 1 to 7; see Figure 5.1). About one-third of partners were main partners, 45.37% were casual partners, and 19.44% were exchange partners (see Table 5.1).

In most dyads, there was race concurrence between partners. Generally the men were 3.05 years older than their partners (range: -23-23), although 29.63% of female partners were older. On average, dyads had known each other for 88.79 months (7 years and 4 months). Most participants socialized with their partners at least once a week or every day (i.e., frequently) and there were 9 dyadic relationships in which the FSPs lived with the participants.

Most relationships were classified as non-conflictual (87.96%). Most of the men did not report that they were financially dependent on their female partner (18.52%). One-fifth (19.44%) of relationships were characterized with high trust.

#### *Description of the MSMW*

On average, the men were 31.87 years old (range: 22-59; see Table 5.1). Over two-thirds (69.35%) had at least a high school-level education. Two-thirds (67.74%) identified as bisexual and few (6.45%) identified as gay. Over one-half (58.06%) reported heavy drinking and three-quarters (77.42%) had used another substance in the past three months. The most frequently used substance was marijuana (54.84% reporting some use in the past three months), followed by crack cocaine (48.39%) and heroin (37.09%).

Nearly one-third (29.03%) reported being HIV positive and 9.68% were not sure of their HIV serostatus.

*Female partners who knew participant has sex with men*

According to the men, twenty-five (23.15%) of the female partners knew their male partner had sex with men. Only one woman did not treat the participant well because he engaged in same-sex behavior.

Of the 22 men whose 25 partners knew they had sex with men, 18 men told all of their partners; these men had either one or two female partners (see Table 5.2). Of the four men who had not disclosed to all their partners (Participant # 7, 10, 12, and 18), only one of their two or three partners knew about their MSM behavior. Men disclosed to various types of sex partners (main, casual, and exchange). There was no relationship between sex partner type and disclosure.

*Partner, relationship, and MSMW characteristics and disclosure*

From the binary associations (Table 5.1), women who were older, closer in age to their male partners (difference in age between the male and female partner), and knew their partners for a longer period of time were more likely to know the participant had sex with men. Additionally, women were more likely to know if the participant reported high levels of trust, socialized frequently, or had high quality communication with their female partners. When the participant suspected that the female partner had ever had a STI or had partnerships outside their relationship, his female partners were less likely to know the participant had sex with men.

There were three MSMW characteristic variables that had a bivariate association with disclosure. There was a positive association between ecstasy use and gay/bisexual

identity and disclosure. Men who identified as gay or bisexual compared to men who identified as heterosexual were more likely to disclose. HIV positive MSMW were more likely to disclose compared to HIV negative or serostatus unknown MSMW.

In the multivariate model (see Table 5.1), for each year the man was older than the female partner, the odds of disclosure decreased by 5%. There was a positive association between disclosure and HIV serostatus and trust in the relationship. Men who had high trust in their FSP were more likely to disclose. If the MSMW was HIV positive, disclosure was more likely to occur than in relationships where the man was HIV negative or did not know his serostatus.

#### *Disclosure and condom use*

After controlling for factors associated with disclosure, disclosure of same-sex behavior is significantly and positively associated with condom use (see Table 5.1). Those who socialized at least weekly or lived together (frequently socialized) were less likely to use condoms each time they had sex compared to dyads that socialized infrequently. Men who used crack cocaine in the last three months were less likely to use condoms. In relationships where the female partner loaned or gave the MSMW money, condom use was less likely. The HIV serostatus interaction effect was nonsignificant, indicating that the effect of disclosure on condom use did not differ by HIV serostatus.

#### DISCUSSION

In this study of African American MSMW, disclosure of male-male sexual behavior to female partners occurred in 23.15% of the relationships. This rate is lower than other studies of disclosure of behavior to female partners. This difference may be



due to the methodology used to identify the sample of MSMW, measure disclosure, and identify female partners.

In the multivariate model, both MSMW and partner characteristics were associated with disclosure of same-sex behavior. Factors associated with disclosure are age difference, level of trust, and the male partner's HIV status.

The difference in age between sexual partners is an important consideration for HIV prevention. In other studies of heterosexual dyads, HIV infection in female partners increased when male partners were older (35, 36). Some have hypothesized that this increased HIV risk due to differences in partners' age is due to power differentials in the relationship, with the older partner having more power and control in the relationship. If this is the case, then older partners may not feel the same obligation to disclose such personal information. The results of this study would support this hypothesis as when men and women in the dyad were closer in age disclosure was more likely to occur.

Similar to previous studies about disclosure (37), trust was found to be an important factor influencing disclosure. Participants who thought they could highly trust their female partners were more likely to disclose.

In dyads where the male partner was HIV positive, disclosure of same sex behavior was more likely. As part of HIV prevention, the man could disclose his HIV positive status. However, none of the HIV positive men disclosed their HIV serostatus to their female partners (results not shown). Instead, perhaps, participants disclose a sexual history of having sex with men, perhaps to suggest to their female partners they may be at risk for HIV. While both HIV and male-male sexual behavior are stigmatized, there may be a hierarchy in which aspect is more stigmatizing.

Disclosure of same-sex behavior was significantly and positively associated with condom use. This finding is similar to previous studies about disclosure. However, one strength of this study is its ability to explore the relationship among all female partners. Unlike other previous studies, the analysis was not limited to looking at the association between disclosure and condom use with most recent female partner or a specific type of relationship (i.e., main, casual, or exchange partner).

In terms of the other factors associated with consistent condom use, there were more relationship characteristics associated with consistent condom use than individual-level MSMW characteristics. There were no female partner characteristics associated with condom use in the multivariate model.

The MSMW-specific characteristic associated with condom use was the man's crack cocaine use. Previous research has also found a link between crack cocaine use and unprotected sex (38-41).

The three relationship characteristics were financial support, socialization frequency, and seroconcordance. Financial support was marginally negatively associated with condom use. If the woman provided financial support to the male partner either by giving or loaning him money, consistent condom use was less likely to occur. The majority of women who gave or loaned money to their male partners were main partners (68.75%). Within HIV prevention literature, most of the focus has been on men giving money to their female partners, the reverse direction. This association would be an important one to further explore and perhaps with guidance from anthropology, sociology, and consumer research which has looked at gift giving as part of reciprocity and the social exchange process (42-44).

There was a trend that partners who socialized more frequently were less likely to use condoms consistently; the more socialization, the lower the odds of consistent condom use. It is also possible that couples that spend more time together are also closer and have a more intimate relationship. And as discussed by other researchers, those who feel more connected to and intimate with their partners generally use condoms less (45-49). Future research is needed to understand this finding.

Seroconcordant couples were less likely to use condoms. While most studies about seroconcordance have focused on male-male dyads, this finding aligns with previous research. Given the high HIV seroconversions rate, this is of particular concern for relationships where both partners were perceived to be HIV negative.

Results from this study suggest that it is possible that these heterosexual dyads were engaging in serosorting as over 80% of relationships were seroconcordant. However, it is not clear how the men learned of their female partner's HIV status. When asked if they had talked to partners about their HIV status, conversations only occurred in 59.26% of the dyads; and there was no association between HIV status conversations and seroconcordance (results not shown). Exploring this relationship would be an important aspect to understand the relationship dynamic between MSMW and their female partners.

There are several limitations of the current study, including its generalizability and sample size. This study uses data from a larger study, which was focused on a fairly unique group of participants. In order to be a part of the larger study, the men had to report unprotected anal intercourse with a man in the past three months, be willing to take an HIV test (if HIV negative or status unknown or provide documentation of HIV-positive status), and be willing to recruit social network members into the study. These

men might be fairly different from others who are not engaging in unprotected anal intercourse, unwilling to be tested, or unwilling to recruit social network members.

Additionally, not all men who reported having sex with women in the “main survey” reported female sex partners in their social network. In the main survey, participants were asked how many women they had sex with in the past three months. Men who responded one or more could be classified as MSMW. However, of the 73 MSMW based on the main survey, only 60 reported female partners in their social network. In other words, 13 men who had sex with women in the past three months did not describe any female sex partners in their social network and were excluded from the analysis (see Table D.1 in Appendix). Of these 13 men, 4 reported having a main female partner (2 reported having a main female partner only, 1 reported having both a main FSP and a non-main FSP, and 1 reported having a main female partner and 3 non-main female partners) and 9 reported having casual female partners only (i.e., non-main female partner). There may be something particularly unique about the female sex partners who were named in the social network or there may be differences between the MSMW who described female partners in their social network and those who did not. It is not possible to compare female partners who were named to those who were not named, but it is possible to compare the MSMW who described female partners in their social network to those who did not. Comparing the sociodemographics of the men MSMW who reported female partners and those who did not report female partners in their social network, there were few significant differences: sexual identity, number of female sex partners in the past three months, HIV testing, and internalized homonegativity. Men who identified as gay were significantly less likely to report female partners in their social networks.

Men who reported FSPs in their social network reported a higher numbers of female partners in the past three months, were more likely to have ever been tested for HIV (marginally significant), and had lower internalized homonegativity (marginally significant) compared to men who did not report any FSPs in their social network. There were no differences in age, education, income, health insurance, incarceration history, history of having a STI, number of male partners in the past three month, number of transgender partners in the past three months, substance use, social network size, and depression.

Social desirability bias is of particular concern as the discussion of sexual behaviors generally and same-sex sexual behavior can be uncomfortable for participants, value-laden, and stigmatized. In order to reduce social desirability bias, audio-computer-assisted self-interviewing (ACASI) was used to collect information from participants about themselves (i.e., MSMW characteristics). This method provides the participant increased privacy for reporting particularly sensitive or stigmatizing behaviors. Research has demonstrated that participants who are surveyed using ACASI reported more risk behaviors than those who completed interviewer-administered questionnaires or face-to-face interviews (50-53). For portions of the survey that were administered face-to-face, the research staff has had many years of experience and training in working with marginalized populations. They have had great success in building rapport and helping participants feel more comfortable, and been trained to be sensitive.

Another limitation is the reliance of the participant to report on partner characteristics. For this study, it is not possible to confirm the accuracy of the information provided, such as the partner's HIV status, age, and drug use. From research about proxy

reports, it suggests they are accurate for certain types of information. Participants in heterosexual partnerships can accurately provide information about their partners' age, race, HIV positive serostatus, and type or duration of the relationship (54-56). Among studies that survey both partners in a relationship, there is some agreement for substance use and whether a partner has an outside partner, but poorer awareness for a partners' recent STI diagnosis (55, 56). Researchers should be mindful of the tradeoff of cost, burden, and risk of surveying both partners for self-reported information instead of using proxy information. One benefit of using proxy information is this information reported by the participants represents the unique information they are using to make their decisions.

In terms of the association between disclosure and condom use, it is not possible to determine the temporality. Therefore, while it may be tempting to recommend MSMW disclose to their female partners as an intervention to decrease HIV risk, further research is needed. Further research could not only ask participants whether they disclosed but when relative to having sex with their partners and how the disclosure occurred.

Other areas of future research include learning how sexual partnerships with female partners develop. In qualitative work to explore the disclosure of bisexuality by Black MSMW, some participants reported disclosing to "female friends who became sexual partners" (28); this could also be the case for some of these relationships. To understand the impact of trust and length of the relationship, purposive sampling of dyads by length of relationship and level of trust would also be useful.

However, despite these limitations, this study was able to examine the relationship between dyad characteristics that had not been quantitatively modeled before. These findings provide a more nuanced picture of the factors associated with

disclosure and condom use. The data are unique in rich for representing both information about the female partners and MSMW-FSP relationship characteristics while simultaneously providing information about the MSMW.

This study suggests that disclosure of same-sex behavior may be an important aspect for HIV prevention as disclosure was significantly and positively associated with consistent condom use. Disclosure may be a part of larger conversations about HIV prevention that occurs between sex partners. Partners may have been discussing other aspects of HIV or sexual health, including condom use negotiation or HIV status and disclosure could have happened as part of the conversation. However, before making the recommendation that all MSMW disclose their same-sex behavior to female participants, additional research should be conducted. Given the lack of success of HIV prevention efforts that only focus on increasing condom usage, MSM disclosure may have potential as an aspect of multifaceted HIV prevention interventions.

## TABLES

Table 5.1 Partner, Relationship, and MSMW<sup>1</sup> Characteristics and Associations with Disclosure and Consistent Condom Use

	n (%) unless otherwise stated	Disclosure OR (95% CI)	Disclosure AOR (95% CI)	Consistent Condom Use OR (95% CI)	Consistent Condom Use AOR (95% CI) <sup>4</sup>
FSP <sup>2</sup> Mean Age (SD)	38.98 (9.17)	1.05 (1.00, 1.11) <sup>†</sup>		0.99 (0.93, 1.04)	
FSP currently unemployed	40 (37.04)	0.94 (0.37, 2.43)		0.64 (0.27, 1.51)	
FSP Heroin use <sup>3</sup>	14 (12.96)	0.89 (0.21, 3.75)		1.06 (0.34, 3.33)	
FSP Crack use <sup>3</sup>	22 (20.37)	1.32 (0.47, 3.73)		0.58 (0.22, 1.54)	
FSP Cocaine use <sup>3</sup>	12 (11.11)	1.79 (0.50, 6.42)		0.67 (0.18, 2.55)	
FSP Methamphetamine use <sup>3</sup>	2 (1.85)	0.76 (0.10, 5.77)		0.34 (0.04, 2.87)	
FSP Injection drug use <sup>3</sup>	3 (2.78)	1.69 (0.15, 19.61)		0.69 (0.06, 7.59)	
FSP had outside partner	51 (48.57)	0.40 (0.16, 1.03) <sup>†</sup>		1.14 (0.45, 2.89)	
FSP ever had STI	19 (17.59)	0.57 (0.16, 2.04) <sup>†</sup>		1.02 (0.33, 3.17)	
FSP HIV positive	11 (10.19)	2.07 (0.46, 9.40)		0.49 (0.10, 2.44)	
Mean Age difference (SD)	3.05 (8.48)	0.93 (.87, .99) <sup>*</sup>	0.95 (0.88, 1.02) <sup>‡</sup>	0.99 (0.94, 1.05)	
Race Concordance	102 (94.44)	0.58 (0.10, 3.43)		1.46 (0.25, 8.54)	
Gotten high with FSP	23 (21.30)	1.63 (0.56, 4.74)		0.20 (0.05, 0.78) <sup>*</sup>	
Seroconcordant	89 (82.41)	0.67 (0.23, 1.98)		0.31 (0.09, 1.07) <sup>†</sup>	0.22 (0.03, 1.85) <sup>‡</sup>
Known $\geq$ 10 years	32 (29.63)	2.91 (1.32, 6.42) <sup>**</sup>		1.13 (0.47, 2.69)	
Socialization frequency					
Infrequently ( $\leq$ few times a yr)	12 (11.11)	Referent		Referent	Referent
Monthly	30 (27.78)	1.65 (0.33, 8.26)		0.29 (0.08, 1.09) <sup>†</sup>	0.28 (0.05, 1.59) <sup>‡</sup>
Frequently ( $\geq$ weekly)	66 (61.11)	2.64 (0.70, 9.91) <sup>‡</sup>		0.17 (0.05, 0.57) <sup>**</sup>	0.09 (0.02, 0.56) <sup>**</sup>
Cohabitation	9 (8.33)	0.89 (0.25, 3.19)		0.16 (0.02, 1.33) <sup>†</sup>	
Emotional support	21 (19.44)	1.43 (0.49, 4.20)		0.64 (0.22, 1.86)	



Material support	21 (19.44)	1.92 (0.68, 5.42)		0.64 (0.22, 1.87)	
Financial support	16 (14.81)	1.13 (0.31, 4.05)		0.41 (0.12, 1.38) <sup>†</sup>	0.25 (0.60, 1.05) <sup>†</sup>
Partner type					
Main	38 (35.19)	Referent		Referent	
Exchange	21 (19.44)	1.10 (0.37, 3.26)		3.21 (0.84, 12.27) <sup>†</sup>	
Casual	49 (45.37)	0.80 (0.40, 1.63)		1.61 (0.77, 3.33)	
High trust	21 (19.44)	2.80 (1.12, 7.00) <sup>*</sup>	2.91 (1.02, 8.36) <sup>*</sup>	1.15 (0.43, 3.10)	
Conflictual relationship	13 (12.04)	1.57 (0.41, 6.02)		0.59 (0.16, 2.09)	
Good/Excellent communication	69 (63.89)	1.74 (0.94, 3.24) <sup>†</sup>		1.46 (0.60, 3.54)	
Financial Dependence	20 (18.52)	1.20 (0.38, 3.75)		0.54 (0.19, 1.51)	
MSMW Mean Age (SD)	41.87 (8.43)	1.01 (0.95, 1.08)		0.96 (0.91, 1.02)	
MSMW Education					
Less than HS	19 (30.65)	Referent		Referent	
HS diploma	28 (45.16)	0.83 (0.23, 2.95)		0.72 (0.26, 1.98)	
Some college or more	15 (24.19)	1.87 (0.49, 7.18)		0.73 (0.23, 2.36)	
MSMW Heavy drinking <sup>3</sup>	36 (58.06)	2.30 (0.75, 7.11)		1.20 (0.48, 3.01)	
MSMW Marijuana use <sup>3</sup>	34 (54.84)	1.16 (0.41, 3.30)		0.58 (0.23, 1.43)	
MSMW Ecstasy use <sup>3</sup>	4 (6.45)	4.27 (0.70, 26.09) <sup>*</sup>		1.05 (0.29, 3.88)	
MSMW Cocaine use <sup>3</sup>	13 (20.97)	1.93 (0.60, 6.20)		0.55 (0.18, 1.64)	
MSMW Crack use <sup>3</sup>	30 (48.39)	1.63 (0.57, 4.65)		0.39 (0.16, 0.97) <sup>*</sup>	0.20 (0.07, 0.61) <sup>**</sup>
MSMW Methamphetamine use <sup>3</sup>	2 (3.23)	0.76 (0.10, 5.77)		0.34 (0.04, 2.87)	
MSMW Heroin use <sup>3</sup>	23 (37.09)	0.60 (0.19, 1.84)		1.10 (0.45, 2.70)	
MSMW High internalized homonegativity	29 (42.77)	0.59 (0.20, 1.74)		0.83 (0.34, 2.07)	
MSMW Sexual identity					
Heterosexual	14 (22.58)	Referent		Referent	
Gay/Bisexual/Other	48 (77.42)	0.30 (0.06, 1.55) <sup>†</sup>		1.91 (0.70, 5.22)	
MSMW Exchanged sex <sup>3</sup>	19 (30.65)	0.46 (0.13, 1.63)		1.06 (0.42, 2.69)	
MSMW HIV Positive	18 (29.03)	2.79 (0.94, 8.25) <sup>†</sup>	2.74 (0.86, 8.75) <sup>†</sup>	3.64 (1.20, 11.07) <sup>*</sup>	

Disclosure	25 (23.15%)	N/A	N/A	2.40 (0.96, 6.00) <sup>†</sup>	3.40 (1.01, 11.41) <sup>*</sup>
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OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval.

<sup>1</sup>. Men who have Sex with Men and Women. <sup>2</sup>. Female Sex Partners. <sup>3</sup>. In the past 3 months. <sup>4</sup>. Model controlling for factors associated with disclosure.

\*\*  $p < .01$ . \*  $p < .05$ . <sup>†</sup>  $p < .10$ . <sup>‡</sup>  $p < .20$ .

Table 5.2 Number and Type of Female Partners among Participants who Disclosed

Participant	Number of female partners <sup>1</sup>			Number who know MSM
	Main	Casual	Exchange	
1	0	2	0	2
2	0	1	0	1
3	1	0	0	1
4	0	0	1	1
5	0	1	0	1
6	0	1	1	2
7	2	1	0	1 <sup>a</sup>
8	1	0	0	1
9	1	0	0	1
10	1	1	0	1 <sup>b</sup>
11	1	0	0	1
12	0	0	3	1
13	0	1	0	1
14	0	1	0	1
15	0	1	0	1
16	1	0	0	1
17	0	0	1	1
18	1	0	1	1 <sup>c</sup>
19	1	1	0	2
20	0	1	0	1
21	1	0	0	1
22	1	0	0	1

<sup>1</sup>. In the past 3 months.

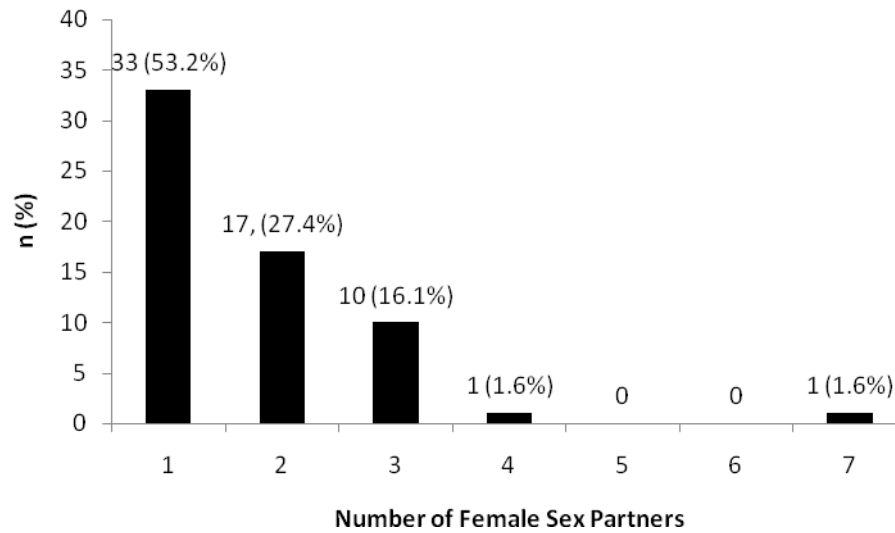
<sup>a</sup>. Participant 7 had only disclosed to one of two main female partners.

<sup>b</sup>. Participant 10 had disclosed to his main female partner.

<sup>c</sup>. Participant 18 had disclosed to his exchange female partner.

## FIGURE

Figure 5.1 Number of Female Sex Partners



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## **CHAPTER SIX: DISCUSSION**

## OVERVIEW

The issue of HIV continues to be a major public health issue, and for good reason. Despite plateaus in the number of new infections at the national level in the past recent years, HIV rates are high and HIV continues to impact subpopulations in disproportionate ways, in particular African American men who have sex with men (AAMSM). When discussing ways to improve HIV prevention, encouraging disclosure of same-sex behavior is one option. Disclosure to health care providers (HCPs) is associated with HIV and other sexually transmitted infections (STIs) testing and vaccination recommendations made by health care providers; and to female sex partners, condom use. However, disclosure may not be the most appropriate recommendation for all, as previous research has identified negative physical, emotional, and mental consequences of disclosure. Furthermore, if individuals are already engaging in HIV-prevention behaviors (such as consistent condom use and following HIV and STI screening guidelines), disclosure may not be necessary. To summarize and expand the current understanding of disclosure of same-sex behavior by African American men who have sex with men within the context of HIV prevention, a literature review and two empirical research studies were conducted.

In this chapter, each of the four dissertation study aims is reviewed. Limitations and strengths of this dissertation, suggestions for future research, and public health implications are also discussed.

## SUMMARY OF FINDINGS

*Study aim 1: To describe the scientific evidence for disclosure of same-sex behavior to promote HIV prevention, including factors associated with disclosure of same-sex behavior*

In Manuscript 1, a systematic literature review summarized and provided a critique of the current body of knowledge of same-sex behavior disclosure. In particular, the measurement and rates of disclosure, factors associated with disclosure, association between disclosure and HIV risk, and theoretical perspectives used to study disclosure are covered. After searching three electronic databases, 133 unique articles were reviewed. Overall, there was great range in disclosure rates, varying from 12% to 91%. For each specific target of disclosure, there was also large variation in rates. Disclosure by AAMSM was less frequent compared to disclosure by other ethnic/racial groups, particularly White MSM. There does not appear to be a standard methodology used to measure disclosure across studies. Most effort has been placed in quantifying disclosure rates. Some focus has been placed to identify individual-level correlates and there is a limited understanding of how relationship and discloser characteristics are associated with disclosure. There are also contradictory results in the association between disclosure and sex risk behaviors. Most studies do not describe a theoretical perspective that guided their research. Among the perspectives used, these tend to stem from sociological or individualistic perspectives.

*Study aim 2: To identify the factors associated with disclosure of same-sex behavior to health care providers*

In Manuscript 2, a quantitative analysis of existing data resulted in the identification of social network characteristics and MSM-characteristics associated with disclosure to health care providers. Descriptive, bivariate, and multivariate analyses were carried out using data from 226 AAMSM who resided in Baltimore city. In this sample, 68% of participants had disclosed. Men who did not disclose were more likely to identify

as bisexual and engage in risky drinking. Positive serostatus, socialization with social network members, and having a social network where all members knew the participant was a man who had sex with men are positively associated with disclosure to health care providers.

*Study aim 3: To identify women to whom have been disclosed and factors associated with disclosure of same-sex behavior to female sex partners*

In Manuscript 3, a quantitative analysis of existing data addressed study aim 3. This dataset is a subset of the data used to address study aim 2. Descriptive, bivariate, and multivariate analyses were carried out using data from 108 AAMSMW. In this sample, disclosure occurred in slightly less than one-quarter (23%) of relationships. Factors associated with disclosure are the age difference between the man and his female partners, level of trust between partners, and the male partner's HIV status.

*Study aim 4: To examine the association between disclosure and condom use with female sex partners*

In addition to the above, in Manuscript 3, an additional analysis was conducted to address study aim 4. After controlling for factors associated with disclosure, disclosure of same-sex behavior was significantly and positively associated with consistent condom use with female sex partners.

## STUDY LIMITATIONS

There are several limitations of this research. The limitations of the research include cross-sectional study design, sampling methods and generalizability, and biases.

*Cross-sectional study design*



A cross-sectional study design does not allow researchers to make causal inferences. Without temporal information it is not possible to know whether condom use was the result of disclosure. Questions related to temporality or causality should be investigated further using longitudinal study designs or methods for estimating causal effects.

#### *Sampling methods and generalizability*

Another limitation of this study is the generalizability of the sample. Participants of the original data set were identified through nonprobability sampling and their experiences may not be generalized to African American men who have sex with men in Baltimore city. However, due to the inclusion criteria of the original study, these participants represent men who engage in behaviors that put them at risk for HIV and who are willing to recruit social network members or men who are social network members willing to participate in a HIV prevention research study. They represent a unique subpopulation for which HIV prevention interventions are needed and may be particularly powerful given their inclination to participate.

#### *Biases*

Recall and social desirability bias could have affected the data provided by the participants. It is possible that the men underreported risky or socially stigmatizing behaviors. Using audio computer-assisted self-interviewing (ACASI) may have minimized these potential issues. Additionally, for Manuscript 3, the participants were asked to report on characteristics of their female sex partners. It is possible that they may have erroneously reported characteristics; however, the information they provided reflects their reality and perceptions of their female partners.

## FUTURE RESEARCH

Results from the manuscripts indicate the need for future research about the context of disclosure. From Manuscript 2, the disclosure to health care providers study, one area that is largely missing is information about the health care providers. No information about their characteristics was collected. As alluded to by previous research about disclosure of sexual identity to health care providers, the health care provider and interactions with health care providers matter to whether disclosure occurs or not. Little is known about how the HCP and patient-provider relationship impacts the disclosure of same-sex behavior. While some preliminary data were available for some participants (see Appendix B), these men differ from the larger sample (see Table C.1). Additionally, few men provided information, resulting in a rather small sample size, limiting the drawing of inferential conclusions.

Additionally, mixed methods could strengthen our understanding of disclosure to both health care providers and female sex partners. Several of the factors identified in these studies have not been discussed in the literature. Following these findings with qualitative interviews with participants could greatly enhance our knowledge and allow us to better understand the relevance of these factors. Through qualitative methods, participants may bring to light other factors that were not measured but are important to disclosure, including the process and motivations for disclosure, which could then enhance larger quantitative surveys.

In most of the studies, disclosure is treated like a binary variable – participants either disclosed or they did not disclose. This measurement approach may have inadvertently limited researchers’ understanding of disclosure and the process. It is

possible that individuals engage in partial disclosure or testing of the relationship before disclosure occurs. For example, men may have told the disclosee something else that was private and personal to see if s/he could keep the information private. If the disclosee was found trustworthy, they may have taken a bigger risk by telling the disclosee information related to the stigmatizing behavior and noted their reaction. That reaction, whether negative or positive, could have influenced future and further disclosure not only with that particular person, but also to other people in their social network.

Disclosure is not limited to verbal utterances and how men disclose could be studied. Participants may have found other ways to allude to their same-sex behavior, such as, leaving up websites or apps that have the purpose of helping men meet men for sex or leaving brochures about sexual health for men who have sex with men out openly. Another area of inquiry would be to consider the possibility of assumed disclosure to health care providers by men who attend gay-friendly clinics. Do these men make the assumption that their HCPs assume they have sex with men because they are attending a gay-friendly clinic?

Disclosure is most likely a process that is not merely an end result but a product of multiple inputs and interactions that change relationships and relationship dynamics. In addition to studying whether disclosure occurred with one person, researchers should keep in mind the multiple people in participants' lives and the influence they may have on whether disclosure occurs to another person.

In order to better study these processes, traditional surveys are not the most appropriate. Methods such as calendar-based interviewing, daily diaries, and ecological

momentary assessment allow researchers to obtain more rich and complex data that provide a more complete picture of disclosure.

#### STUDY STRENGTHS

The first manuscript explores the literature focused on disclosure of same-sex behavior. Among the existing published reviews, many conflate disclosure of same-sex behavior and disclosure of sexual identity, making it difficult to understand these two separate, yet at times related, phenomena. This manuscript was unique in its careful evaluation of studies that focused on same-sex behavior. Given the breadth of topics covered, several gaps in the literature were identified. In the second and third manuscript, gaps in the literature related to the social environment and its role in disclosure were examined.

Findings from Manuscript 2 are supported by previous findings regarding the association between HIV serostatus and sexual identity and disclosure; however, associations between heavy alcohol consumption and disclosure were not previously discussed in the literature. The identification of social network characteristics associated with disclosure is also fairly novel.

In Manuscript 3, this study was able to quantitatively identify relationship- and partner-characteristics associated with disclosure and adds to our understanding as most of the previous research in this area has been based on qualitative research. These findings are generally supported by previous research findings.

While previous research has examined the disclosure-condom use relationship, findings have been mixed and most of this research was conducted using global measures or limited to condom use with a specific female partner (e.g., most recent). This study

was able to uniquely examine the disclosure-condom use relationship by using social network data. With this methodology, data were collected about and modeled for every female sex partner. This allows for a more precise understanding of the relationship between disclosure and risk behaviors. Only one other study had used a social network approach, but instead of preserving the dyad, had collapsed the data and created one summary measure across all female partners.

#### PUBLIC HEALTH IMPLICATIONS

Taken together, the results from the three manuscripts lend support of the importance of the social environment to address disclosure and HIV prevention among African American men who have sex with men. While most of the focus in understanding disclosure of same-sex behavior has been on individual-level factors that differentiate disclosers and non-disclosers, these studies suggest that there are factors outside the individual that have an impact on disclosure. Therefore, attention and efforts should be placed on modifying social environments that encourage disclosure when the situation is appropriate. Interactions with HCPs are presented first.

One possibility is to increase the number of providers who are comfortable with addressing sexual health and male-male sexual behavior. These HCPs may be less judgmental of their patients and their behaviors, able to elicit disclosure in a more appropriate ways, and then provide more informed health care recommendations than providers who are less knowledgeable and comfortable with this population. These types of providers may also increase the probability of disclosure.

There are several possible venues to engage in order to develop a larger pool of HCPs who would be able to provide services more appropriately to MSM. Among

potential HCPs in training, one possibility is to develop and implement curriculums in schools that teach students sensitivity skills and provide opportunities to hone these skills for MSM patients. Another option for current practicing providers would be to change continuing education policies and requirements to enhance the likelihood providers either choose to or continue to train in these fields. Finally, while these disclosures and subsequent conversations may take more time than generally allowed by current clinic guidelines, policy changes for both the clinic and billing and reimbursement should be adjusted to support these interactions.

Within the medical care arena, another major issue to contend with is the fact that many young MSM rarely seek medical care. Routine HIV screening has been discussed as a way to increase HIV testing. While there are many proponents of universal HIV testing during medical care visits, HIV testing without the proper counseling may actually have a negative effect. Men who experience poorly executed HIV testing and counseling may have a more difficult time understanding their HIV test results and may make poor decisions based on this misinformation. Additionally, as HIV testing is recommended annually for MSM, sour experience may turn men, even those who had been more open to seeking HIV screening, off from seeking future services, contributing to an increasing body of men who are unaware of their HIV serostatus. Therefore, prevention counseling may be an important component that also needs to be encouraged in medical care settings.

Among disclosure to female sex partners, in order to create social environments that are more supportive of disclosing same-sex behavior, addressing social and cultural factors to increase acceptance of same-sex behavior is needed. Broadly, some promising

historical events have occurred, particularly the increase in the number of states that legally recognize same-sex marriage in the United States, including Maryland. However, these trends do not necessarily trickle down to microsocial climates where there may still be negative attitudes against same-sex behaviors. Therefore, these sources of the prejudice and discrimination towards same-sex behaviors also need to be addressed.

Additionally, intervention efforts can also be taken to increase the social support provided to MSMW as a buffer to the discrimination and stigma they may receive in general and as a result of same-sex behavior disclosure. There are numerous potential targets of these intervention efforts, including MSM and trusted others in these men's social networks.

By addressing both of these areas, disclosure would be met with less stigma, the risk and potential negative consequences of disclosure would decrease, and disclosure would be more likely to occur.

## CONCLUSION

HIV is a serious threat to the health of all people, especially men who have sex with men. This study demonstrates the importance of understanding the role of not only individual-level factors, but also the social environment on disclosure, a potential HIV prevention strategy.

## APPENDIX

### APPENDIX A

#### TABLES

Table A.1 Sample and Social Network Characteristics, and Bivariate and Multivariate Associations with Disclosure to Health Care Providers by HIV Positive African American Men who have Sex with Men (MSM) in the Unity iN Diversity Study

	n (%)	Not disclose (n=9)	Disclose (n=85)	OR (95% CI)	AOR (95% CI) <sup>3</sup>
Mean age (SD)	41.1 (7.8)	40.6 (5.9)	41.2 (8.0)	1.01 (0.94, 1.08)	
Education					
Less than HS	19 (20.2)	4 (44.4)	15 (17.6)	Referent	
Diploma/GED	33 (35.1)	4 (44.4)	29 (34.1)	1.93 (0.42, 8.87)	
Some college or higher	42 (44.7)	1 (2.4)	41 (48.2)	10.93 (1.11, 108.07)*	
Income					
<\$10,000	55 (58.5)	6 (66.7)	49 (89.1)	Referent	
\$10,000-\$29,999	27 (28.7)	3 (33.3)	24 (88.9)	0.98 (.22, 4.32)	
\$30,000+	12 (12.8)	0 (0.0)	12 (100.0)	-	
Employment					
Full-time	12 (12.8)	0 (0.0)	12 (14.1)	-	
Part-time	4 (4.3)	1 (11.1)	3 (3.5)	0.47 (0.04, 5.54)	
Not working	37 (39.4)	5 (55.6)	32 (37.6)	Referent	
On disability	41 (41.6)	3 (33.3)	38 (44.7)	1.98 (0.44, 8.98)	
Has health insurance	74 (78.7)	7 (77.8)	67 (78.8)	1.06 (0.20, 5.63)	
Mean visits to health care providers (SD) <sup>1</sup>	6.7 (5.9)	8.1 (7.1)	6.6 (5.8)	0.96 (0.88, 1.06)	



Medical care location					
Medical doctor's office	42 (44.7)	4 (44.4)	38 (44.7)	Referent	
Emergency room	26 (27.7)	3 (33.3)	23 (27.1)	0.81 (0.16, 3.97)	
Community/free clinic	21 (22.3)	2 (22.2)	19 (22.4)	1 (0.17, 6.04)	
Other	5 (5.3)	0 (0.0)	5 (5.9)	-	
Nowhere	0 (0.0)	-	-	-	
Depressive symptoms (CES-D > 16)	37 (39.4)	5 (55.6)	32 (37.6)	0.48 (0.12, 1.97)	
Recent STI <sup>2</sup>	9 (9.6)	2 (22.2)	7 (8.2)	0.31 (0.05, 1.83) <sup>†</sup>	
Recent incarceration <sup>2</sup>	14 (14.9)	0 (0.0)	14 (31.1)	-	
Sexual identity					
Homosexual, gay	61 (64.9)	2 (22.2)	59 (69.4)	Referent	Referent
Bisexual	24 (25.5)	5 (55.6)	19 (22.4)	0.13 (0.02, 0.73) <sup>*</sup>	0.45 (0.21, 0.94) <sup>*</sup>
Heterosexual or other	9 (9.6)	2 (22.2)	7 (8.2)	0.19 (0.01, 1.00) <sup>†</sup>	0.74 (0.25, 2.24)
Risky drinking (AUDIT-C > 4) <sup>2</sup>	54 (57.5)	7 (77.8)	47 (55.3)	0.35 (0.07, 1.85)	
Marijuana use <sup>2</sup>	44 (46.8)	5 (55.6)	39 (45.9)	0.69 (0.17, 2.77)	
Amyl Nitrate use <sup>2</sup>	12 (12.8)	1 (11.1)	11 (12.9)	1.19 (0.13, 10.92)	
Heroin use <sup>2</sup>	13 (13.8)	2 (22.2)	11 (12.9)	0.52 (0.09, 2.85)	
Crack use <sup>2</sup>	38 (40.4)	5 (55.6)	33 (38.8)	0.51 (0.13, 2.01)	
High MSM discrimination	66 (70.2)	2 (22.2)	64 (75.3)	10.67 (2.00, 56.77) <sup>**</sup>	
High medical distrust	35 (37.2)	4 (44.4)	31 (36.5)	0.72 (0.18, 2.89)	
Sex with women <sup>2</sup>	21 (22.3)	5 (55.6)	16 (18.8)	0.19 (0.04, 0.78) <sup>*</sup>	
Unprotected anal intercourse <sup>2</sup>	41 (43.6)	3 (33.3)	38 (44.7)	1.62 (0.38, 6.86)	
HIV status of most recent male sex partner					
HIV negative	10 (10.6)	1 (11.1)	9 (10.6)	Referent	
HIV positive	57 (60.6)	5 (55.6)	52 (61.2)	1.16 (0.12, 11.37)	
Unsure of status	27 (28.7)	3 (33.3)	24 (28.2)	0.89 (0.08, 9.96)	
Mean number of male sex partners (SD) <sup>2</sup>	4.1 (3.7)	5.7 (5.6)	3.9 (3.4)	0.91 (0.77, 1.07)	
Mean network size (SD)	7.8 (9.6)	7.7 (4.1)	7.8 (3.6)	1.01 (0.82, 1.24)	
Mean size of enacted soc. supp. netw. (SD)	4.2 (2.4)	3.9 (1.2)	4.2 (2.5)	1.06 (0.89, 1.27)	

Mean frequency socializes (SD)	3.7 (0.7)	3.7 (0.7)	3.7 (0.7)	0.96 (0.38, 2.46)	
Mean trust (SD)	7.2 (2.0)	7.2 (2.7)	7.2 (2.0)	0.98 (0.64, 1.50)	
Gives support to at least 1 network member	34 (36.2)	2 (22.2)	32 (37.6)	2.11 (0.42, 10.51)	
Met at least 1 netw. member in supp. group	15 (16.0)	1 (11.1)	14 (16.5)	1.58 (0.18, 13.74)	
Conflict with at least 1 network member	58 (61.7)	5 (55.6)	53 (62.4)	1.33 (0.32, 5.43)	
Entire network knows participant is MSM	81 (86.2)	4 (44.4)	77 (90.6)	12.03 (2.66, 54.41)**	4.96 (2.27, 10.83)***

<sup>1</sup> In the past year. <sup>2</sup> In the past 3 months. <sup>3</sup> Controlling for having a usual doctor or other health care provider and frequency of visits to health care providers in the past 12 months. ‡  $p < .20$ . †  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table A.2 Sample and Social Network Characteristics, and Bivariate and Multivariate Associations with Disclosure to Health Care Providers by HIV Negative or HIV-status unsure African American Men who have Sex with Men (MSM) in the Unity in Diversity Study

	n (%)	Not disclose (n=63)	Disclose (n=69)	OR (95% CI)	AOR (95% CI) <sup>3</sup>
Mean age (SD)	35.6 (11.7)	37.4 (12.1)	33.8 (11.1)	0.97 (0.95, 1.00) <sup>†</sup>	
Education					
Less than HS	29 (22.0)	16 (25.4)	13 (18.8)	Referent	
Diploma/GED	49 (37.1)	23 (36.5)	26 (37.7)	1.39 (0.56, 3.44)	
Some college or higher	54 (40.9)	24 (38.1)	30 (43.5)	1.54 (0.63, 3.76)	
Income					
<\$10,000	64 (48.5)	34 (54.0)	30 (43.5)	Referent	
\$10,000-\$29,999	48 (36.4)	21 (33.3)	27 (39.1)	1.46 (0.67, 3.15)	
\$30,000+	20 (15.2)	8 (12.7)	12 (17.4)	1.70 (0.61, 4.75)	
Employment					
Full-time	23 (17.4)	11 (17.5)	12 (17.4)	Referent	
Part-time	23 (17.4)	14 (22.2)	9 (13.0)	0.59 (0.20, 1.76)	
Not working	61 (46.2)	27 (42.9)	34 (49.3)	1.15 (0.45, 2.97)	
On disability	25 (18.9)	11 (17.5)	14 (20.3)	1.17 (0.37, 3.66)	
Has health insurance	81 (61.4)	38 (60.3)	43 (62.3)	1.09 (0.52, 2.29)	
Mean visits to health care providers (SD) <sup>1</sup>	3.2 (4.2)	2.7 (4.5)	3.7 (3.9)	1.07 (0.91, 1.25)	
Medical care location					
Medical doctor's office	43 (32.6)	23 (36.5)	20 (29.0)	Referent	
Emergency room	54 (40.9)	26 (41.3)	28 (40.6)	1.24 (0.55, 2.80)	
Community/free clinic	28 (21.2)	9 (14.3)	19 (27.5)	2.43 (0.88, 6.73) <sup>†</sup>	
Other	2 (1.5)	2 (3.2)	0 (0.0)	-	
Nowhere	5 (3.8)	3 (4.8)	2 (2.9)	0.77 (0.12, 4.89)	
Depressive symptoms (CES-D > 16)	45 (34.1)	23 (36.5)	22 (31.9)	0.81 (0.38, 1.72)	

Recent STI <sup>2</sup>	6 (4.6)	2 (3.2)	4 (5.8)	1.88 (0.32, 10.92)	
Recent incarceration <sup>2</sup>	20 (15.2)	10 (15.9)	10 (14.5)	0.90 (0.33, 2.44)	
Sexual identity					
Homosexual, gay	71 (53.8)	26 (41.3)	45 (65.2)	Referent	
Bisexual	49 (37.1)	30 (47.6)	19 (27.5)	0.37 (0.16, 0.82) <sup>*</sup>	
Heterosexual or other	12 (9.1)	7 (11.1)	5 (7.3)	0.41 (0.13, 1.32) <sup>†</sup>	
Risky drinking (AUDIT-C > 4) <sup>2</sup>	82 (62.1)	44 (69.8)	38 (55.1)	0.53 (0.24, 1.16) <sup>†</sup>	0.38 (0.15, 0.94) <sup>*</sup>
Marijuana use <sup>2</sup>	71 (53.8)	31 (49.2)	40 (58.0)	1.42 (0.71, 2.86)	
Amyl Nitrate use <sup>2</sup>	9 (6.8)	2 (3.2)	7 (10.1)	3.44 (0.65, 18.28) <sup>†</sup>	
Heroin use <sup>2</sup>	29 (22.0)	16 (25.4)	13 (18.8)	0.68 (0.29, 1.61)	
Crack use <sup>2</sup>	44 (33.3)	24 (38.1)	20 (29.0)	0.66 (0.32, 1.38)	
High MSM discrimination	77 (58.3)	37 (58.7)	40 (58.0)	0.97 (0.49, 1.90)	
High medical distrust	52 (39.4)	26 (41.3)	26 (37.7)	0.86 (0.42, 1.76)	
Sex with women <sup>2</sup>	52 (39.4)	33 (52.4)	19 (27.5)	0.35 (0.16, 0.73) <sup>**</sup>	
Unprotected anal intercourse <sup>2</sup>	30 (37.9)	27 (42.9)	23 (33.3)	0.67 (0.32, 1.41)	
HIV status of most recent male sex partner					
HIV negative	86 (65.2)	37 (58.7)	49 (71.0)	Referent	
HIV positive	15 (11.4)	7 (11.1)	8 (11.6)	0.86 (0.29, 2.58)	
Unsure of status	31 (23.5)	19 (30.2)	12 (17.4)	0.48 (0.20, 1.15) <sup>†</sup>	
Mean number of male sex partners (SD) <sup>2</sup>	4.9 (5.6)	4.6 (6.1)	5.1 (5.0)	1.02 (0.95, 1.09)	
Mean network size (SD)	8.7 (4.6)	7.9 (3.4)	9.5 (5.4)	1.09 (1.01, 1.18) <sup>*</sup>	1.11 (1.02, 1.21) <sup>*</sup>
Mean size of enacted soc. supp. netw. (SD)	4.5 (2.6)	4.1 (2.0)	5.0 (3.0)	1.15 (1.01, 1.32) <sup>*</sup>	
Mean frequency socializes (SD)	3.7 (0.7)	3.5 (0.7)	3.9 (0.7)	2.21 (1.16, 4.22) <sup>*</sup>	2.43 (1.19, 4.97) <sup>*</sup>
Mean trust (SD)	7.2 (1.8)	6.9 (1.8)	7.4 (1.7)	1.17 (0.96, 1.42) <sup>†</sup>	
Gives support to at least 1 network member	47 (35.6)	18 (28.6)	29 (42.0)	1.81 (0.88, 3.71) <sup>†</sup>	
Met at least 1 netw. member in supp. group	10 (7.6)	1 (1.6)	9 (13.0)	9.30 (1.07, 80.83) <sup>*</sup>	
Conflict with at least 1 network member	82 (62.2)	41 (65.1)	41 (59.4)	0.79 (0.39, 1.59)	
Entire network knows participant is MSM	86 (65.2)	32 (50.8)	54 (78.3)	3.49 (1.62, 7.51) <sup>**</sup>	4.23 (1.89, 9.46) <sup>***</sup>

<sup>1</sup> In the past year. <sup>2</sup> In the past 3 months. <sup>3</sup> Controlling for having a usual doctor or other health care provider and frequency of visits to health care providers in the past 12 months. <sup>‡</sup>  $p < .20$ . <sup>†</sup>  $p < .10$ . <sup>\*</sup>  $p < .05$ . <sup>\*\*</sup>  $p < .01$ . <sup>\*\*\*</sup>  $p < .001$ .

## APPENDIX B: Health Care Provider Characteristics associated with Disclosure of Same-Sex Behavior of African American Men who have Sex with Men

### ABSTRACT

Most research on the disclosure of same-sex behavior to health care providers by men who have sex with men (MSM) has focused on individual-level differences between those who disclose and those who do not disclose. However, very little is known about the health care provider (HCP) and their influence on this communication. The purpose of this study was to describe the health care provider, practice, and relational factors between patient and provider that are associated with men who have sex with men disclosing their same-sex behaviors. Fifty-two African American MSM reported on the characteristics of 57 HCPs. Slightly less than three-quarters (70.2%) of HCPs knew of the MSM's same-sex behavior. Age of the health care provider, age difference between the provider and MSM, and geographic distance between the provider and MSM were significantly associated with disclosure. Disclosure was more likely with older HCPs and when HCPs were older than the participant. HCPs who practiced within 1 mile of the participants were less likely to be disclosed to. Given the positive associations of disclosure to HCPs, it is important to understand the influence of HCP characteristics as part of interventions to encourage disclosure. Health care providers, as the target and counterpart of these disclosures, are an important facet in creating an environment that promotes or discourages disclosure and greatly influence the interactions between patient and provider.

### INTRODUCTION

In the published studies about disclosure of same-sex behaviors to health care providers (HCPs) by men who have sex with men (MSM), the focus has been on the comparing men who disclose to men who do not disclose. Sexual identity, race, geographic location, income, and sexual history have all been identified as factors associated with disclosure (1-3).

Very little information is known about the health care providers to whom the disclosure occurs. Previous studies have identified that HCPs who were female, gay, younger, or gay friendly were more likely to be disclosed to (4, 5). Health care providers, as the target and counterpart of these disclosures, are an important facet in creating an environment that promotes or discourages disclosure and greatly influence the interactions between patient and provider. Lesbian, gay, and bisexual patients who reported having positive exchanges with their HCP (e.g., excellent use of eye contact, personal distance, communication skills, and inclusive language by their HCP) were more likely to disclose their sexual identity (5). However, most of the research in this area has focused on gay-identified patients and the disclosure of sexual orientation and not same-sex behavior. While sexual orientation disclosure is important and may indicate the occurrence of same-sex behaviors, there is not a perfect correlation between sexual orientation and same-sex behaviors. Furthermore, African Americans MSM are less likely to identify as gay or bisexual. Their experiences around disclosure have not been thoroughly examined.

Disclosure is one aspect of patient-provider communication; yet, other important factors identified from the general patient-provider communication literature, such as race concordance and the type of social support HCPs can provide have not been

explored in this context of disclosing same-sex behaviors. HCPs have the potential of providing a variety of different types of social support (e.g., instrumental, informational, appraisal) to their patients. The purpose of this study was to describe the sociodemographic characteristics of the health care providers and social support health care providers provided to patients and to determine which of those factors were associated with MSM disclosing same-sex behaviors.

## METHODS

Data for the current study were from the baseline survey from Unity iN Diversity (UND), a pilot HIV risk-reduction intervention for African American MSM conducted in Baltimore, MD (for a full discussion of the sample and recruitment, see (6)). As part of the baseline survey, participants generated the names of their social network members using a modified version of the Arizona Social Support Inventory. Participants, then, systematically described each social network member, including their relationship to the participant (e.g., sex partner, cousin, neighbor, therapist), age, race, gender, how much they trusted them, physical distance apart, how often they saw one another, and social support received. Men who reported at least one doctor/nurse (here on out addressed as HCP) were included in this analysis.

Descriptive analyses were conducted. Binary and multivariate exact logistic regression was conducted to assess the association between key independent variables and the dependent variable, disclosure.

## RESULTS



Of the 226 MSM who completed the baseline survey, 52 reported a HCP as part of their social network. Forty-seven men (90.4%) reported 1 HCP and 5 men reported 2 HCPs, for a total identification of 57 HCPs.

On average, HCPs were 46.0 years old (SD = 7.8, Range: 25-60) and 4.1 years older than the participant (SD = 11.04, Range: -18-28) (see Table B.1). Slightly more than half (56.1%) were male. The most common race for the HCP was white (42.1%), although there was race concordance between patient and provider for 38.6% of the participants. Few providers were Hispanic (n=1, 1.8%), Asian (n=6, 10.5%), or another race/ethnicity (n=4, 7.0%). The length of time the MSM reported knowing their HCP ranged from 1 month to 192 months, with the median being 3 years (36 months). Slightly more than half of the participants saw their HCP about once a month. Few participants (10.5%) lived within 1 mile of their HCP. On average, participants report a trust of 8.6 (out of a 10-point scale) and 61.4% trusted their HCPs with their life (i.e., a score of 10 out of 10; high trust).

All but two MSM reported that their HCP provided some type of social support. Most HCPs (86.0%) provided informational support (i.e., advice about health problems) and fewer HCPs (17.5%) provided emotional support (i.e., talk to about things that were personal and private).

Nearly three-quarters of providers (70.2%) knew the participant had sex with men.

From the bivariate analysis (see Table B.1), there were three variables significantly associated with disclosure: age of the HCP, age difference between the HCP and participant, and distance. Older HCPs were more likely to know the participant had

sex with men; for every year, the HCP was 12% more likely to know the participant had sex with men. Similarly, when there was a positive difference in age between the HCP and participant, disclosure was more likely. For every year the HCP was older than the participant, men were 6% more likely to disclose. If a participant lived less than 1 mile away from his HCP, he was less likely to disclose compared to men who lived at least 1 mile away.

In the multivariate analysis, two different models were run given the high and significant correlation between age and age difference: one model with age and distance and another model with age difference and distance (see Table B.1). Age, age difference, and distance were significant. Providers who were older or when there was a positive age difference (HCP's age minus participant's age) were positively associated with disclosure. If participants lived within 1 mile of their HCP, they were less likely to disclose.

## DISCUSSION

There was a relatively high rate of disclosure of same-sex behavior to HCPs as 70.2% of men reported disclosing this information. Other studies have found much lower rates. The difference in the disclosure rate may be due to the recall method. Men who reported a HCP in their social network may have a different and perhaps more meaningful relationship with their HCP than men who saw a HCP in the past six months but did not think of him or her as a member of their social network. Additionally these men may be different than men who did not report a HCP. In comparing these two groups (men who reported a HCP to men who did not report a HCP), there were quite a few

differences, including age, employment, health insurance status, and HIV serostatus (see Table C.1).

The most common type of social support provided was informational support as HCPs are trained to provide advice about health problems to their patients. As fewer HCPs provided emotional support, this finding suggests there might be an opportunity to intervene with HCPs to train them to provide emotional support and increase the social support men receive, which may help buffer stressors.

This study identified several HCP characteristics associated with disclosure, age, HCP-MSM age difference, and distance from the participant. For every year of age of the HCP, the odds of disclosure increased by 15%. For every year the HCP was older than the participant, the odds of disclosure increased by 7%. Participants who lived within 1 mile from their HCPs were less likely to disclose.

The association between age and disclosure is contrary to other studies. Other studies found a positive association between younger HCP age and disclosure (4), while this study found the opposite. Age of physician may represent a proxy of years of experience. Perhaps older HCPs are more accustomed to having discussions about sensitive information in general; so, by extension they may be more comfortable with this topic. The association between age difference and distance are new and warrant further exploration.

Drawing from other areas of patient-provider research (older patients and bioethics), the age difference between providers and the men could be related to patient barriers in obtaining information (7) and the respect between patient and provider (8).

This relational aspect has not been studied in this context and warrants additional exploration.

The negative association between disclosure and close proximity to one's HCP could be related to the disclosure of stigmatized information. Men who lived close to their HCP's office or the clinic where they see their HCP may be concerned of running into their HCP while in the neighborhood and inadvertent disclosure by the HCP. Therefore, it seems like while health care services should be positioned in easily accessible locations, there may be a geographic radius in which to consider locating clinics for the men to be most comfortable in providing this vital, yet highly sensitive, information to providers.

There are several limitations of the study. Most notably is the small sample size. Given the sample size and power limitations, it is not possible to say how these factors would be influenced in a model consisting of factors about the MSM in addition to HCP characteristics. However, given the number of studies that tend to focus on the patient without considering the influence of the HCP, this study lends a new focus on the HCP.

Additionally, there were two sources of non-independent observations. First, some MSM named more than one HCP in their social network so there is the issue of possible non-independence among HCPs. Second, because of the purpose of the study that these data are from, some of the participants were recruited by other participants, bringing in another source of non-independence of observations. With dependent data, there are concerns that the standard error is underestimated and an artificial increase in our confidence in the association between the factors and outcome.

Another limitation is the use of self-reported data. Men may have been influenced by social desirability bias to agree that they had disclosed to their HCP. Furthermore, data about the HCPs come from the participants and there is reliance on the participants' perception about their HCPs to learn the HCPs' characteristics. For example, participants may not have accurately reported the HCPs' age, but other characteristics, like race and gender may have been easier to report accurately.

Despite these limitations, there are several important public health implications. Future research should continue to understand the role that HCP characteristics have in the disclosure of same-sex behavior. As this study suggests, in addition to interventions addressed at the men to increase disclosure, attention should also be on the HCPs. As part of interventions, one particularly useful aspect may be to train HCPs to provide additional social support to MSM as they are in a prime position to do so.

TABLE

Table B.1 Characteristics of HCPs and Associations with Disclosure

		OR (95% CI)	AOR (95% CI) <sup>1</sup>	AOR (95%, CI) <sup>1</sup>
M (SD)				
Age	46.0 (7.8)	1.12 (1.04, 1.23) <sup>**</sup>	1.15 (1.04, 1.28) <sup>**</sup>	
Age difference	4.1 (11.0)	1.06 (1.00, 1.13) <sup>*</sup>		1.07 (1.01, 1.16) <sup>*</sup>
Months known	45.5 (49.0)	1.01 (0.99, 1.02)		
n (%)				
Gender concordance	32 (56.1)	0.42 (0.10, 1.59)		
Race concordance	22 (38.6)	0.86 (0.23, 3.27)		
Frequency see				
≤ Few times a yr	15 (26.3)	RC		
Once a month	29 (50.9)	0.42 (0.06, 2.06)		
> Once a month	13 (22.8)	0.84 (0.09, 7.73)		
Distance				
≥1 mile	51 (89.5)	RC	RC	RC
<1 mile	6 (10.5)	0.06 (0.00, 0.66) <sup>*</sup>	0.05 (0.00, 0.58) <sup>*</sup>	0.06 (0.00, 0.66) <sup>*</sup>
High Trust	35 (61.4)	1.64 (0.44, 6.06)		
Emotional support	10 (17.5)	1.86 (0.31, 20.04)		
Informational support	49 (86.0)	0.76 (0.07, 4.92)		

<sup>\*\*</sup>  $p < 0.01$ . <sup>\*</sup>  $p < 0.05$ . <sup>1</sup> Due to high and significant correlation between age and age difference ( $r = 0.75$ ,  $p < .001$ ), only one of these variables was included in the multivariate model.

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## APPENDIX C

### TABLE

Table C.1 Difference between Participants who Identified a Health Care Provider in their Networks and those who did not

	Did not Identify a Health Care Provider (n = 174)	Identified a Health Care Provider (n = 52)
Mean age (SD) <sup>*</sup>	36.67 (11.11)	41.85 (7.38)
Education <sup>†</sup>	n (%)	n (%)
Less than HS	42 (24.14)	6 (11.54)
HS diploma or GED	58 (33.33)	24 (46.15)
Some college or higher	74 (42.53)	22 (42.31)
Income		
<\$10,000	92 (52.87)	27 (51.92)
\$10,000-\$29,999	59 (33.91)	16 (30.77)
\$30,000+	23 (13.22)	9 (17.31)
Employment <sup>*</sup>		
Full-time	29 (16.67)	6 (11.54)
Part-time	24 (13.79)	3 (5.77)
Not working	79 (45.40)	19 (36.54)
On disability	42 (24.14)	24 (46.15)
Has health insurance <sup>**</sup>	110 (63.22)	45 (86.54)
Mean visits to health care providers (SD) <sup>1 ***</sup>	3.88 (4.73)	7.29 (6.17)
Medical care location <sup>*</sup>		
Medical doctor's office	55 (31.61)	30 (57.69)
Emergency room	67 (38.51)	13 (25.00)
Community/free clinic	42 (24.14)	7 (13.46)
Other	5 (2.87)	2 (3.85)
Nowhere	5 (2.87)	0
Depressive symptoms (CES-D > 16)	61 (35.06)	21 (40.38)
Recent STI <sup>2</sup>	11 (42.31)	4 (44.44)
HIV status <sup>***</sup>		
Negative	91 (52.30)	13 (25.00)
Positive	57 (32.76)	37 (71.15)
Unknown	26 (14.94)	2 (3.85)
Recent incarceration <sup>2</sup>	23 (22.95)	6 (16.67)
Sexual identity		
Homosexual, gay	103 (59.20)	29 (55.77)
Bisexual	55 (31.61)	18 (34.62)
Heterosexual or other	16 (9.20)	5 (9.62)

Risky drinking (AUDIT-C > 4) <sup>2</sup>	106 (60.92)	30 (57.69)
Marijuana use <sup>2 ‡</sup>	89 (51.15)	19 (36.54)
Amyl Nitrate use <sup>2 *</sup>	12 (6.90)	9 (17.31)
Heroin use <sup>2</sup>	30 (17.24)	12 (23.08)
Crack use <sup>2 †</sup>	58 (33.33)	24 (46.15)
High MSM discrimination	110 (63.22)	33 (63.46)
High medical distrust <sup>‡</sup>	71 (40.80)	16 (30.70)
Sex with women <sup>2</sup>	54 (31.03)	19 (36.54)
Unprotected anal intercourse <sup>2</sup>	70 (40.23)	21 (40.38)
HIV status of most recent male sex partner <sup>***</sup>		
HIV negative	45 (25.86)	27 (51.92)
HIV positive	86 (49.43)	10 (19.23)
Unsure of status	43 (24.71)	15 (28.85)
Mean number of male sex partners (SD) <sup>2</sup>	4.64 (5.16)	4.22 (3.73)

*Note.* <sup>1</sup> In the past year. <sup>2</sup> Timeframe for incarceration, sex risk, alcohol use, and drug use were in the past 3 months. \*\*\*  $p < 0.001$ . \*\*  $p < 0.01$ . \*  $p < 0.05$ . †  $p < 0.10$ . ‡  $p < 0.20$ .

## APPENDIX D

### TABLE

Table D.1 Disclosure to Female Partners among Participants Excluded from Analyses

Participant	Number of female partners <sup>1</sup>		Disclosed have sex with men to partner
	Main	Casual	
A	0	1	Yes
B	0	1	Yes
C	1	0	No
D	1	0	No
E	0	1	No
F	1	1	No <sup>2</sup>
G	0	1	No
H	0	1	No
I	0	3	No <sup>2</sup>
J	0	1	No
K	0	1	No
L	1	3	No <sup>2</sup>
M	0	1	No

<sup>1</sup>. In the past 3 months, as reported in the main survey. <sup>2</sup>. Participant did not disclose to any female partners.

**CURRICULUM VITAE**  
**CHRISTINA J. SUN, PhD, MS**

**PERSONAL**

Date of birth: August 21, 1982

Location of birth: Charleston, SC, USA

**EDUCATION**

- PhD**, Social and Behavioral Sciences 2014  
Johns Hopkins Bloomberg School of Public Health  
Department of Health, Behavior and Society  
Advisor: Carl Latkin
- Community-Based Public Health Certificate** 2012  
Johns Hopkins Bloomberg School of Public Health
- MS**, Psychology (Social/Clinical) 2007  
California State University, Fullerton  
Advisor: Kristin Beals
- BS**, Psychology (Mathematics Emphasis) 2004  
University of California, Davis

**RESEARCH EXPERIENCE**

- Research Assistant** Aug. 2009 – present  
Lighthouse at Peer Point  
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
- Perform statistical analyses about sexual and drug risk behaviors for manuscripts and presentations
  - Develop survey questionnaire items (Dr. Carl Latkin)
- Research Assistant** June 2010 – Sep. 2010  
Center for Communication Programs  
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
- Composed project progress report materials about HIV prevention activities in Malawi, BRIDGE II Project (Dr. Rajiv Rimal)
- Research Assistant** Jan. 2009 – Aug. 2010  
Johns Hopkins Preparedness and Emergency Response Research Center  
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
- Assisted in designing a study to understand how first responders react to emergency situations and its impact on mental health

- Recruited participants
- Designed, implemented, and monitored internet-based surveys (Dr. Douglas Storey)

**Research Assistant**

July 2006 – Oct. 2008

Department of Psychology

California State University, Fullerton

- Managed 4 undergraduate students studying how coping of academic stress impacts health among college students
- Trained undergraduate students to conduct statistical analyses
- Created and monitored 3 internet-based surveys (Dr. Nana Sadamura)

**Graduate Research Assistant**

Sep. 2005 – Aug. 2007

Department of Psychology

California State University, Fullerton

- Designed daily diary and longitudinal data collection to study the influence societal messages have on physical and psychological well-being among lesbian, gay, and bisexual individuals
- Conducted multilevel modeling data analysis
- Managed 4 undergraduate research assistants to collect data
- Composed and submitted documentation for and obtained IRB approval
- Obtained funding to conduct research
- Established subject protocol, including sensitivity training
- Collected and prepared data for analysis (Dr. Kristin P. Beals)

**Graduate Research Assistant**

Aug. 2006 – Aug. 2007

Department of Psychology

California State University, Fullerton

- Conducted secondary data analysis about intimate partner violence and delivery of services to ethnic minority communities (Dr. Mikyong Kim-Goh)

**Research Assistant**

Jan. 2004 – Sep. 2004

Department of Psychology

University of California, Davis

- Prepared a meta-database of publicly available data for analysis (Dr. Shelley Blozis)

**Research Assistant**

July 2003 – Sep. 2004

Asian American Center on Disparities Research

University of California, Davis

- Collected and cleaned data from an internet-based survey
- Reviewed literature (Dr. Nolan Zane)

## **PUBLICATIONS**

### **Journal Articles**

Tobin, K.E., Yang, C., **Sun, C. J.**, Spikes, P., Patterson, J., Latkin, C. (in press). Discrepancies between HIV prevention communication attitudes and actual conversations about HIV testing within social and sexual networks of African American men who have sex with men. *Sexually Transmitted Diseases*.

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### **Unpublished Manuscripts**

**Sun, C. J.** (2007). Identity Support and Identity Devaluation: Do "Public Voices" Impact the Health and Well-Being of Gay Men and Lesbian Women? *Masters Thesis*.

## **ABSTRACTS**

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Tobin, K., **Sun, C. J.**, Latkin, C., & Curriero, F. (2013, April 11). *Comparing socio-spatial characteristics and spatial variation of places African American men who have sex with men socialize and meet sex partners in Baltimore City*. Poster presentation. Association of American Geographers' Annual Meeting, Los Angeles, CA.

Levin, M. B., Doerr, E., **Sun, C. J.**, Borkoski, C. (2013, April 5). *Integrating service-learning into health professional education*. Poster presentation. Institute for Excellence in Education 2013 Education Conference and Celebration, Baltimore, MD.

**Sun, C. J.** & Latkin, C. (2011, October 31). *Snowmageddon and daily living: How a vulnerable population prepared for and were impacted by severe weather*. Poster presentation. American Public Health Association 139<sup>th</sup> Annual Meeting, Washington, DC.

**Sun, C. J.**, Rosenbaum, J., & Latkin, C. (2011, August 21). *What it really costs: HIV and STI risks of financially dependent inner-city women*. In C. Wellin (Organizer), *Strategies and Constraints: Living with Chronic Illness in Diverse Settings and Communities*. Oral presentation. Society for the Study of Social Problems 61<sup>st</sup> Annual Meeting, Las Vegas, NV.

Storey, D., Rajiv, R., Smith, K., **Sun, C. J.**, Raunde, R. (2011, May 29). *The role of communication in mental health preparedness and response*. Panel presentation. Annual International Communication Association 61<sup>st</sup> Conference, Boston, MA.

**Sun, C. J.**, Berg, K., & Boulay, M. A. (2010, November 8). *Individual and social factors related to safer sexual behavioral intention among a sample of Bangladeshi adolescents*. Poster presentation. American Public Health Association 138<sup>th</sup> Annual Meeting, Denver, CO.

Berg, K., **Sun, C. J.**, & Babalola, S. (2009, December 3). *Predictors of parent-child communication among a nationally representative sample in Nigeria*. Oral presentation. Social Aspects of HIV/AIDS Research Alliance (SAHARA) conference, Midrand, South Africa.

**Sun, C. J.**, Gravel, K. L., Sadamura, N., & Moniz, E. (2008, October). *Ethnic minority generational status: Implications for service provision policy*. Poster presentation. American Public Health Association Annual Meeting, San Diego, CA.

Gravel, K. L., **Sun, C. J.**, Sadamura, N., & Moniz, E. (2008, August). *Ethnicity, coping and alcohol use*. Poster presentation. American Psychological Association Convention, Boston, MA.

Sadamura, N., & **Sun, C. J.** (2008, March). *Ethnicity, coping and help-seeking*. Poster presentation. International Counseling Psychology Conference, Chicago, IL.

**Sun, C. J.**, Beals, K. P., Vashishtha, S., Hoffman, A. L., Mantenga, N., Slaughter, R. I., & Gillogly, R. A. (2007, August 17). *Disclosure reasons for lesbians, gay men, and bisexual women*. Poster presentation. American Psychological Association Convention, San Francisco, CA.

**Sun, C. J., & Beals, K. P.** (2007, May 26). *Identity support and identity devaluation predict well-being among lesbians, bisexual women, and gay men*. Poster presentation. Association for Psychological Science 18<sup>th</sup> Annual Conference, Washington, D.C.

**Sun, C. J., Beals, K. P., Hoffman, A. L., Vashishtha, S., Gillogly, R. A., Mantenga, N., & Slaughter, R. I.** (2007, May 5). *Disclosure patterns among bisexual women*. Poster presentation. Western Psychological Association 87<sup>th</sup> Annual Conference, Vancouver, Canada.

**Sun, C. J., & Beals, K. P.** (2006, March 30). *Identity support, identity devaluation, and well-being among lesbians*. Poster presentation. Western Psychological Association 86<sup>th</sup> Annual Conference, Palm Springs, CA.

**Sun, C. J.** (2007, March 15). *The effect of identity support and identity devaluation on the psychological well-being of lesbian and bisexual women*. In K. P. Beals (Chair), *Exploring the Romantic and Social Network Relationships of Lesbian and Bisexual Women*. Oral presentation. Conference on Scholarship on Women, Fullerton, CA.

## **TEACHING EXPERIENCE**

### **Gordis Teaching Fellow**

Spring 2013

Department of Public Health Studies  
Johns Hopkins University, Baltimore, MD

- HIV, Behavior and Society

### **Teaching Assistant**

2009 – 2012

Department of Health, Behavior and Society  
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

- Introduction to Community-Based Participatory Research: Principles and Methods
- Doctoral Seminar in Mixed Methods for Public Health Research
- Psychosocial Factors in Health and Illness
- Program Planning for Health Behavior Change
- Translating Research into Public Health Programs I&II
- Health and Homelessness

### **Supervisory Teaching Assistant**

2010, 2011

Department of Health, Behavior and Society  
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

- Program Planning for Health Behavior Change

### **Teaching Assistant**

Spring 2008

School of Nursing  
University of Massachusetts, Amherst

- Intermediate Biostatistics



**Teaching Assistant** 2007 – 2008

Department of Community Health Education

School of Public Health and Health Sciences, University of Massachusetts, Amherst

- My Body, My Health

**Teaching Assistant** 2006 – 2007

Department of Psychology

California State University, Fullerton

- Psychotherapy Techniques
- Advanced Psychological Statistics
- Social Psychology
- Survey of Clinical Psychology

**HONORS AND AWARDS**

Research Supplement to Promote Diversity in Health-Related Research 2012-2014

National Institutes of Drug Abuse, National Institutes of Health

R01 DA031030

President's Associates Outstanding Graduate Student Award 2007

Outstanding Master of Science Student 2007

Graduate Equity Fellowship 2006

Associated Students, Inc. Student Research Grant 2006